

## Combined RCD/MCB Devices FRBdM, digital

SG48312






- High-quality residual current device / miniature circuit breaker combination, line voltage-dependent
- 1+N and 2-pole
- Contact position indicator red - green
- Tripping indicator white - blue
- New level of accuracy -> reduced unwanted tripping
- Local status indication of residual current through 3 LEDs
- 2-position DIN rail clip, permits removal from existing busbar system
- Comprehensive range of accessories suitable for subsequent installation
- Wide variety of rated tripping currents
- Rated currents up to 25 A
- Tripping characteristics B, C, D
- Rated breaking capacity 10 kA

## Combined RCD/MCB Devices FRBdM type G/A

10 kA, 1+N-pole

Surge current-proof 3 kA, sensitive to residual pulsating DC, type G/A (ÖVE E 8601)






	$I_n/I_{\Delta n}$ (A)	Type Designation	Article No.	Units per package	
<b>Characteristic B</b>					
	10/0.01	FRBdM-B10/1N/001-G/A	168249	1/60	
	13/0.01	FRBdM-B13/1N/001-G/A	168250	1/60	
	16/0.01	FRBdM-B16/1N/001-G/A	168251	1/60	
	10/0.03	FRBdM-B10/1N/003-G/A	168264	1/60	
	13/0.03	FRBdM-B13/1N/003-G/A	168265	1/60	
	16/0.03	FRBdM-B16/1N/003-G/A	168266	1/60	
	10/0.1	FRBdM-B10/1N/01-G/A	168279	1/60	
	13/0.1	FRBdM-B13/1N/01-G/A	168280	1/60	
	16/0.1	FRBdM-B16/1N/01-G/A	168281	1/60	
<b>Characteristic C</b>					
	6/0.01	FRBdM-C6/1N/001-G/A	168252	1/60	
	10/0.01	FRBdM-C10/1N/001-G/A	168253	1/60	
	13/0.01	FRBdM-C13/1N/001-G/A	168254	1/60	
	16/0.01	FRBdM-C16/1N/001-G/A	168255	1/60	
	20/0.01	FRBdM-C20/1N/001-G/A	168256	1/60	
	25/0.01	FRBdM-C25/1N/001-G/A	168257	1/60	
	6/0.03	FRBdM-C6/1N/003-G/A	168267	1/60	
	10/0.03	FRBdM-C10/1N/003-G/A	168268	1/60	
	13/0.03	FRBdM-C13/1N/003-G/A	168269	1/60	
	16/0.03	FRBdM-C16/1N/003-G/A	168270	1/60	
	20/0.03	FRBdM-C20/1N/003-G/A	168271	1/60	
	25/0.03	FRBdM-C25/1N/003-G/A	168272	1/60	
	6/0.1	FRBdM-C6/1N/01-G/A	168282	1/60	
	10/0.1	FRBdM-C10/1N/01-G/A	168283	1/60	
	13/0.1	FRBdM-C13/1N/01-G/A	168284	1/60	
	16/0.1	FRBdM-C16/1N/01-G/A	168285	1/60	
	20/0.1	FRBdM-C20/1N/01-G/A	168286	1/60	
	25/0.1	FRBdM-C25/1N/01-G/A	168287	1/60	
	<b>Characteristic D</b>				
		6/0.01	FRBdM-D6/1N/001-G/A	168258	1/60
		10/0.01	FRBdM-D10/1N/001-G/A	168259	1/60
13/0.01		FRBdM-D13/1N/001-G/A	168260	1/60	
16/0.01		FRBdM-D16/1N/001-G/A	168261	1/60	
20/0.01		FRBdM-D20/1N/001-G/A	168262	1/60	
25/0.01		FRBdM-D25/1N/001-G/A	168263	1/60	
6/0.03		FRBdM-D6/1N/003-G/A	168273	1/60	
10/0.03		FRBdM-D10/1N/003-G/A	168274	1/60	
13/0.03		FRBdM-D13/1N/003-G/A	168275	1/60	
16/0.03		FRBdM-D16/1N/003-G/A	168276	1/60	
20/0.03		FRBdM-D20/1N/003-G/A	168277	1/60	
25/0.03		FRBdM-D25/1N/003-G/A	168278	1/60	
6/0.1		FRBdM-D6/1N/01-G/A	168288	1/60	
10/0.1		FRBdM-D10/1N/01-G/A	168289	1/60	
13/0.1		FRBdM-D13/1N/01-G/A	168290	1/60	
16/0.1		FRBdM-D16/1N/01-G/A	168291	1/60	
20/0.1		FRBdM-D20/1N/01-G/A	168292	1/60	
25/0.1		FRBdM-D25/1N/01-G/A	168293	1/60	

## Combined RCD/MCB Devices FRBdM type G/A

10 kA, 2-pole

Surge current-proof 3 kA, sensitive to residual pulsating DC, type G/A (ÖVE E 8601)



	$I_n/I_{\Delta n}$ (A)	Type Designation	Article No.	Units per package	
<b>Characteristic B</b>					
	10/0.01	FRBdM-B10/2/001-G/A	168294	1/60	
	13/0.01	FRBdM-B13/2/001-G/A	168295	1/60	
	16/0.01	FRBdM-B16/2/001-G/A	168296	1/60	
	10/0.03	FRBdM-B10/2/003-G/A	168198	1/60	
	13/0.03	FRBdM-B13/2/003-G/A	168199	1/60	
	16/0.03	FRBdM-B16/2/003-G/A	168200	1/60	
	10/0.1	FRBdM-B10/2/01-G/A	168213	1/60	
	13/0.1	FRBdM-B13/2/01-G/A	168214	1/60	
	16/0.1	FRBdM-B16/2/01-G/A	168215	1/60	
<b>Characteristic C</b>					
	6/0.01	FRBdM-C6/2/001-G/A	168297	1/60	
	10/0.01	FRBdM-C10/2/001-G/A	168298	1/60	
	13/0.01	FRBdM-C13/2/001-G/A	168299	1/60	
	16/0.01	FRBdM-C16/2/001-G/A	168300	1/60	
	20/0.01	FRBdM-C20/2/001-G/A	168301	1/60	
	25/0.01	FRBdM-C25/2/001-G/A	168302	1/60	
	6/0.03	FRBdM-C6/2/003-G/A	168201	1/60	
	10/0.03	FRBdM-C10/2/003-G/A	168202	1/60	
	13/0.03	FRBdM-C13/2/003-G/A	168203	1/60	
	16/0.03	FRBdM-C16/2/003-G/A	168204	1/60	
	20/0.03	FRBdM-C20/2/003-G/A	168205	1/60	
	25/0.03	FRBdM-C25/2/003-G/A	168206	1/60	
	6/0.1	FRBdM-C6/2/01-G/A	168216	1/60	
	10/0.1	FRBdM-C10/2/01-G/A	168217	1/60	
	13/0.1	FRBdM-C13/2/01-G/A	168218	1/60	
	16/0.1	FRBdM-C16/2/01-G/A	168219	1/60	
	20/0.1	FRBdM-C20/2/01-G/A	168220	1/60	
	25/0.1	FRBdM-C25/2/01-G/A	168221	1/60	
	<b>Characteristic D</b>				
		6/0.01	FRBdM-D6/2/001-G/A	168303	1/60
		10/0.01	FRBdM-D10/2/001-G/A	168304	1/60
13/0.01		FRBdM-D13/2/001-G/A	168305	1/60	
16/0.01		FRBdM-D16/2/001-G/A	168195	1/60	
20/0.01		FRBdM-D20/2/001-G/A	168196	1/60	
25/0.01		FRBdM-D25/2/001-G/A	168197	1/60	
6/0.03		FRBdM-D6/2/003-G/A	168207	1/60	
10/0.03		FRBdM-D10/2/003-G/A	168208	1/60	
13/0.03		FRBdM-D13/2/003-G/A	168209	1/60	
16/0.03		FRBdM-D16/2/003-G/A	168210	1/60	
20/0.03		FRBdM-D20/2/003-G/A	168211	1/60	
25/0.03		FRBdM-D25/2/003-G/A	168212	1/60	
6/0.1		FRBdM-D6/2/01-G/A	168222	1/60	
10/0.1		FRBdM-D10/2/01-G/A	168223	1/60	
13/0.1		FRBdM-D13/2/01-G/A	168224	1/60	
16/0.1		FRBdM-D16/2/01-G/A	168225	1/60	
20/0.1		FRBdM-D20/2/01-G/A	168226	1/60	
25/0.1		FRBdM-D25/2/01-G/A	168227	1/60	

## Specifications | Combined RCD/MCB Devices FRBdM, digital

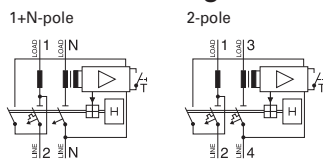
### Description

- Combined RCD/MCB device
- Line voltage-dependent tripping
- Compatible with standard busbar
- Twin-purpose terminal (lift/open-mouthed) above and below
- Busbar positioning optionally above or below
- Free terminal space despite installed busbar
- Guide for secure terminal connection
- Switching toggle (MCB component) in colour designating the rated current
- Contact position indicator red - green
- Fault current tripping indicator white - blue
- Comprehensive range of accessories suitable for subsequent installation
- The test key "T" must be pressed every year. The system operator must be informed of this obligation and his responsibility in a way that can be proven. The yearly test interval is only valid for residential and similar applications. Under all other conditions (e.g. damply or dusty environment), it's recommended to test in shorter intervals (e.g. monthly).
- Pressing the test key "T" serves the only purpose of function testing the residual current device (RCD). This test does not make earthing resistance measurement ( $R_E$ ), or proper checking of the earth conductor condition redundant, which must be performed separately.
- **Type -G/A:** Additionally protects against special forms of residual pulsating DC which have not been smoothed.
- **Type -G:** High reliability against unwanted tripping. Compulsory for any circuit where personal injury or damage to property may occur in case of unwanted tripping (ÖVE/ÖNORM E 8001-1 § 12.1.6). Additionally protects against special forms of residual pulsating DC which have not been smoothed.

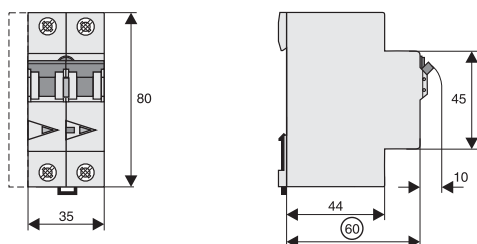
### Accessories:

Auxiliary switch for subsequent installation	ZP-IHK	286052
	ZP-WHK	286053
	ZP-NHK	248437
Shunt trip release	ZP-ASA/..	248438, 248439
Switching interlock	IS/SPE-1TE	101911
Screws lock 2MU	Z-CV/SO-2P	221954800

### Connection diagram



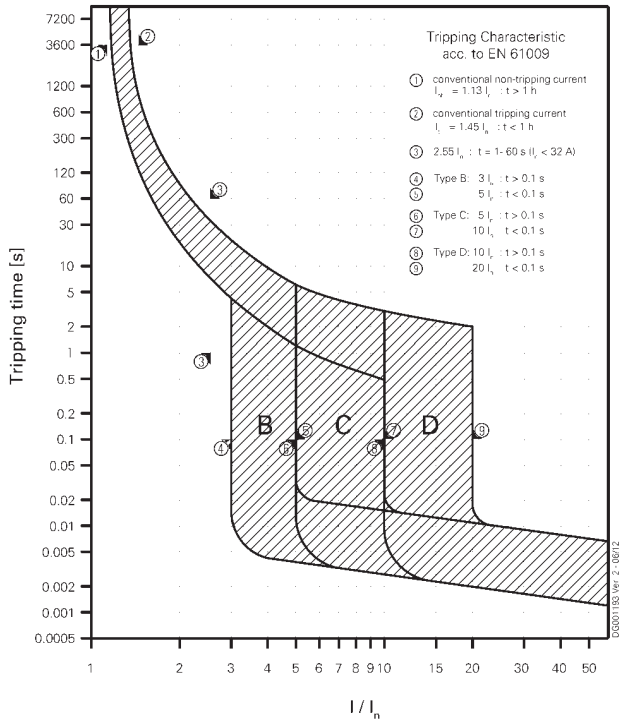
### Dimensions (mm)



## Technical Data

		<b>FRBdM</b>
<b>Electrical</b>		
Design according to		IEC/EN 61009
Current test marks as printed onto the device		
Number of protected poles		
1+N-pole		1
2-pole		2
Tripping		
Type G		line voltage-dependent, 10 ms delay 3 kA (8/20 $\mu$ s), surge current-proof
Rated voltage	$U_n$	240 V AC, 50 Hz
Rated operational voltage	$U_e$	204-260 V AC
Rated tripping current	$I_{\Delta n}$	10, 30, 100 mA
Rated non-tripping current	$I_{\Delta no}$	0.55 $I_{\Delta n}$
Sensitivity		G/A
Press of test button duration		> 0.5 s
Selectivity class		3
Service short circuit capacity	$I_{cs}$	7.5 kA
Rated short circuit capacity	$I_{cn}$	10 kA
Rated current		6 - 25 A
Rated impulse withstand voltage	$U_{imp}$	4 kV (1.2/50 $\mu$ s)
Characteristic		B, C, D
Maximum back-up fuse (short circuit)		100 A gL (>10 kA)
Endurance		
electrical components		$\geq 4,000$ operating cycles ( $I_n, U_n, \cos\varphi = 0.87$ )
mechanical components		$\geq 10,000$ operating cycles
<b>Mechanical</b>		
Frame size		45 mm
Device height		80 mm
Device width		35 mm (2MU)
Mounting		2-position DIN rail clip, permits removal from existing busbar system
Degree of protection switch		IP20
Degree of protection, built-in		IP40
Upper and lower terminals		open mouthed/lift terminals
Terminal protection		finger and hand touch safe, VBG4, ÖVE-EN 6
Terminal capacity rigid solid/stranded wire		1 - 25 mm <sup>2</sup>
Terminal screw		M5 (with slotted screw acc. to EN ISO 4757-Z2, Pozidriv PZ2)
Terminal torque		2 - 2.4 Nm
Busbar thickness		0.8 - 2 mm
Tripping temperature		-25°C to +40°C
Storage- and transport temperature		-35°C to +60°C
Climatic conditions		acc. to IEC 68-2 (25..55°C / 90..95% RH)
Line side (supply)		lower terminals
Load side		upper terminals

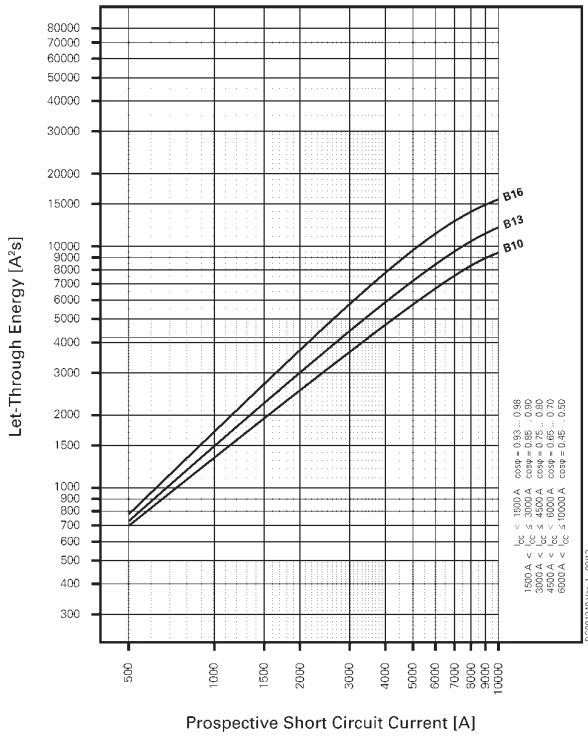
## Tripping Characteristic FRBdM, Characteristics B, C and D



## Let-through Energy FRBdM

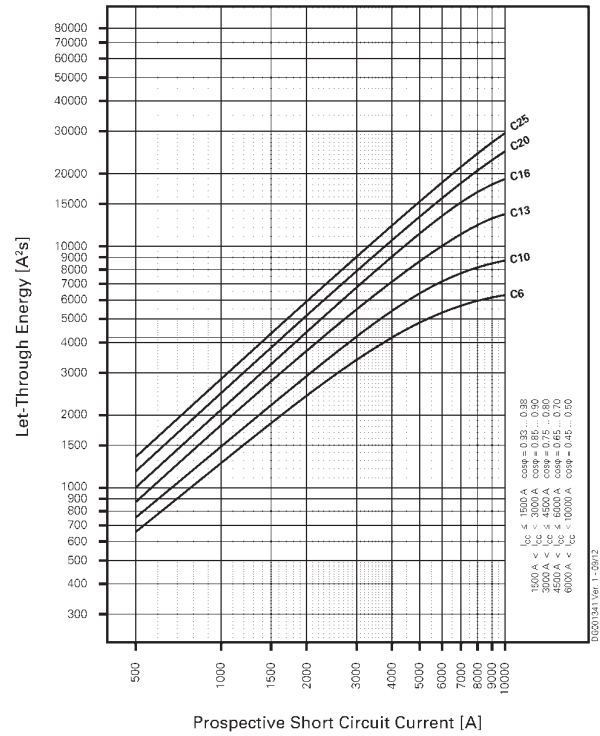
Let-through energy FRBdM, characteristic B

240 V



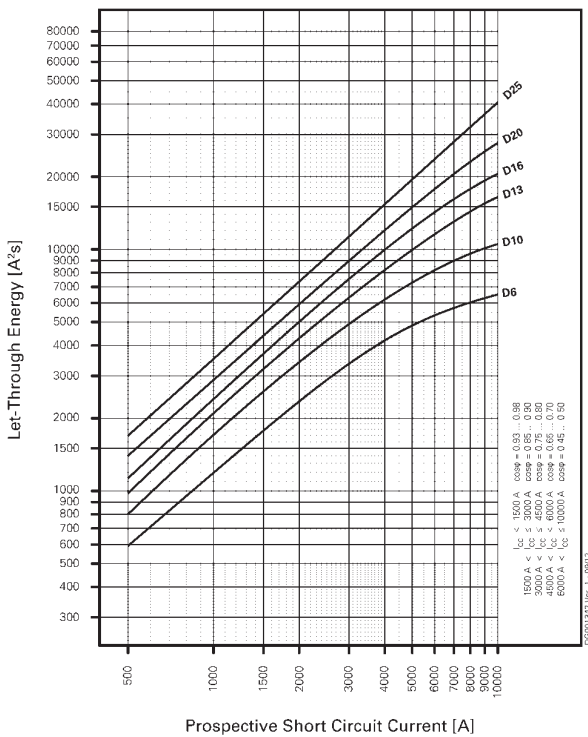
Let-through energy FRBdM, characteristic C

240 V



Let-through energy FRBdM, characteristic D

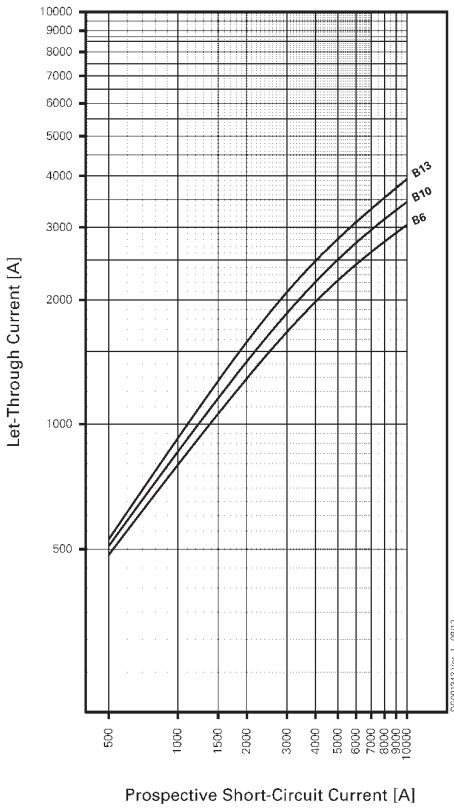
240 V



## Let-through Current FRBdM

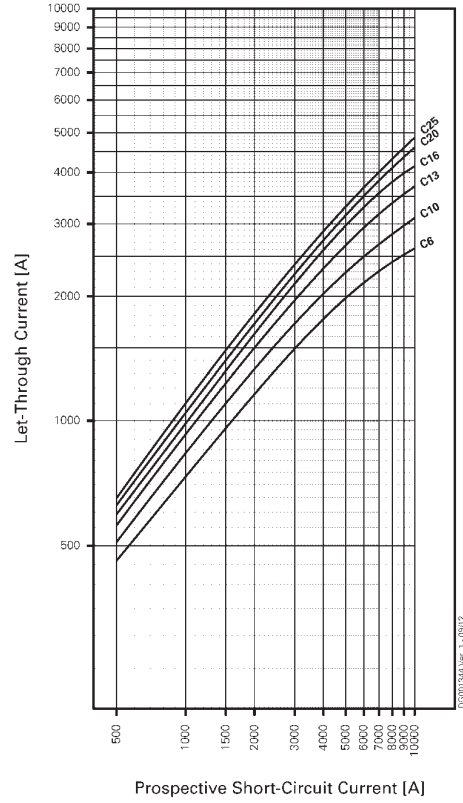
Let-through current FRBdM, characteristic B

240 V



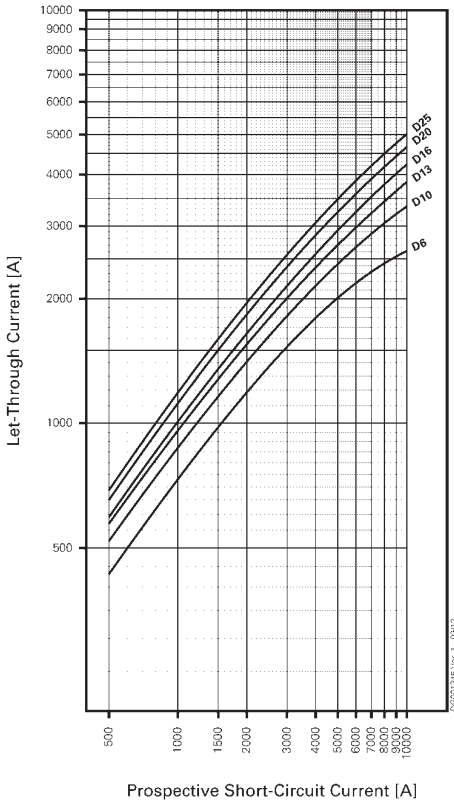
Let-through current FRBdM, characteristic C

240 V



Let-through current FRBdM, characteristic D

240 V





## Selectivity-limit current $I_s$ [kA] for selectivity between FRBdM and NZMB(C)(N)(H)1-A..., NZMB(C)(N)(H)2-A...

Short circuit currents in kA, Rated currents of fuses in A.

Overload and short-circuit release unit NZM at max. value

FRBdM	NZM.1-A...						FRBdM	NZM.2-A...								
	$I_{cu} = 25 (36) (50) (100) \text{ kA}$							$I_{cu} = 25 (36) (50) (150) \text{ kA}$								
	40	50	63	80	100	125	40	50	63	80	100	125	160	200	250	
<b>B10</b>	1.2	1.5	2	2	4	10	<b>B10</b>	1	1.5	2.5	3	10	10	10	10	
<b>B13</b>	1	1.5	2	2	4	10	<b>B13</b>	1	1.2	2	3	10	10	10	10	
<b>B16</b>	1	1.2	1.5	2	3	8	<b>B16</b>	1	1.2	1.5	2.5	10	10	10	10	
<b>C+D6</b>	1.2	1.5	2	2	4	10	<b>C+D6</b>	1	1.5	2.5	3	10	10	10	10	
<b>C+D10</b>	1.2	1.5	2	2	4	10	<b>C+D10</b>	1	1.5	2.5	3	10	10	10	10	
<b>C+D13</b>	1	1.5	2	2	4	10	<b>C+D13</b>	1	1.2	2	3	10	10	10	10	
<b>C+D16</b>	1	1.2	1.5	2	3	8	<b>C+D16</b>	1	1.2	1.5	2.5	10	10	10	10	
<b>C+D20</b>	0.8	1.2	1.5	1.5	3	8	<b>C+D20</b>	1	1.2	1.5	1.5	10	10	10	10	
<b>C+D25</b>	0.7	1.1	1.3	1.3	2.5	6	<b>C+D25</b>	0.9	1.1	1.3	1.3	10	10	10	10	

NZMB1(C1)(N1)(H1):  $I_{cu} (400/415V) = 25(36)(50)(100) \text{ kA}$  (acc. to IEC/EN 60947-2)

NZMB2(C2)(N2)(H2):  $I_{cu} (400/415V) = 25(36)(50)(150) \text{ kA}$  (acc. to IEC/EN 60947-2)

## Selectivity-limit current $I_s$ [kA] for selectivity between FRBdM and NH000/NH00/NH1 gG

Short circuit currents in kA, Rated currents of fuses in A.

FRBdM	NH000/NH00/NH1 gG										
	16	20	25	32	35	40	50	63	80	100	125
<b>B10</b>	<0.5	<0.5	0,9	1,7	2,3	3,4	5,2	6,9	>10	>10	>10
<b>B13</b>	<0.5	<0.5	0,8	1,4	1,9	2,7	4,1	5,2	8,5	>10	>10
<b>B16</b>	<0.5	<0.5	0,7	1,2	1,6	2,2	3,1	3,8	5,7	>10	>10
<b>C6</b>	<0.5	0,5	0,9	1,8	2,5	3,8	8,2	>10	>10	>10	>10
<b>C10</b>	<0.5	<0.5	0,8	1,5	2,0	2,9	4,5	6,6	>10	>10	>10
<b>C13</b>	<0.5	<0.5	0,6	1,2	1,5	2,2	3,3	4,2	6,7	>10	>10
<b>C16</b>	<0.5	<0.5	0,6	1,0	1,3	1,8	2,6	3,3	4,8	>10	>10
<b>C20</b>	<0.5	<0.5	0,5	0,9	1,1	1,6	2,3	2,8	4,1	8,6	>10
<b>C25</b>	<0.5	<0.5	<0.5	0,8	1,0	1,4	2,0	2,5	3,6	7,1	>10
<b>D6</b>	<0.5	0,5	1,0	1,8	2,5	3,8	7,8	>10	>10	>10	>10
<b>D10</b>	<0.5	<0.5	0,7	1,2	1,6	2,4	3,8	5,2	>10	>10	>10
<b>D13</b>	<0.5	<0.5	0,6	1,0	1,3	1,9	2,8	3,6	5,6	>10	>10
<b>D16</b>	<0.5	<0.5	0,5	0,9	1,1	1,6	2,3	2,9	4,3	>10	>10
<b>D20</b>	<0.5	<0.5	<0.5	0,8	1,0	1,4	2,0	2,5	3,6	7,5	>10
<b>D25</b>	<0.5	<0.5	<0.5	0,7	0,8	1,1	1,6	2,1	3,1	5,5	7,7

Rated breaking capacity (NH) AC 500 V = 120 kA (acc. to IEC/EN 60269)

## Back-up Protection between FRBdM and NZM.1-A..., 240 V

Short circuit currents in kA.

FRBdM	NZMB1-A...		
	U <sub>e</sub> = 240 V		
	B	C	D
6	-	25	25
10	25	25	25
13	25	25	25
16	25	25	25
20	-	20	20
25	-	20	20

U<sub>e</sub> = 240V: I<sub>cn</sub> (FRBdM) = 10 kA (acc. to IEC/EN 61009)  
 U<sub>e</sub> = 400/415V: I<sub>cu</sub> (NZMB1) = 25 kA (acc. to IEC/EN 60947-2)

Short circuit currents in kA.

FRBdM	NZMC1-A...		
	U <sub>e</sub> = 240 V		
	B	C	D
6	-	36	36
10	36	36	36
13	36	36	36
16	36	36	36
20	-	20	20
25	-	20	20

U<sub>e</sub> = 240V: I<sub>cn</sub> (FRBdM) = 10 kA (acc. to IEC/EN 61009)  
 U<sub>e</sub> = 400/415V: I<sub>cu</sub> (NZMC1) = 36 kA (acc. to IEC/EN 60947-2)

Short circuit currents in kA.

FRBdM	NZMN1-A...		
	U <sub>e</sub> = 240 V		
	B	C	D
6	-	40	40
10	40	40	40
13	40	40	40
16	40	40	40
20	-	20	20
25	-	20	20

U<sub>e</sub> = 240V: I<sub>cn</sub> (FRBdM) = 10 kA (acc. to IEC/EN 61009)  
 U<sub>e</sub> = 400/415V: I<sub>cu</sub> (NZMN1) = 50 kA (acc. to IEC/EN 60947-2)

Short circuit currents in kA.

FRBdM	NZMH1-A...		
	U <sub>e</sub> = 240 V		
	B	C	D
6	-	40	40
10	40	40	40
13	40	40	40
16	40	40	40
20	-	20	20
25	-	20	20

U<sub>e</sub> = 240V: I<sub>cn</sub> (FRBdM) = 10 kA (acc. to IEC/EN 61009)  
 U<sub>e</sub> = 400/415V: I<sub>cu</sub> (NZMH1) = 100 kA (acc. to IEC/EN 60947-2)

## Back-up Protection between FRBdM and NZM.2-A..., 240 V

Short circuit currents in kA.

FRBdM	NZMB2-A...		
	U <sub>e</sub> = 240 V		
	B	C	D
6	-	25	25
10	25	25	25
13	25	25	25
16	25	25	25
20	-	20	20
25	-	10	10

U<sub>e</sub> = 240V: I<sub>cn</sub> (FRBdM) = 10 kA (acc. to IEC/EN 61009)  
 U<sub>e</sub> = 400/415V: I<sub>cu</sub> (NZMB2) = 25 kA (acc. to IEC/EN 60947-2)

Short circuit currents in kA.

FRBdM	NZMC1-A...		
	U <sub>e</sub> = 240 V		
	B	C	D
6	-	36	36
10	36	36	36
13	36	36	36
16	25	25	25
20	-	20	20
25	-	10	10

U<sub>e</sub> = 240V: I<sub>cn</sub> (FRBdM) = 10 kA (acc. to IEC/EN 61009)  
 U<sub>e</sub> = 400/415V: I<sub>cu</sub> (NZMC2) = 36 kA (acc. to IEC/EN 60947-2)

Short circuit currents in kA.

FRBdM	NZMN1-A...		
	U <sub>e</sub> = 240 V		
	B	C	D
6	-	40	40
10	40	40	40
13	40	40	40
16	25	25	25
20	-	15	15
25	-	10	10

U<sub>e</sub> = 240V: I<sub>cn</sub> (FRBdM) = 10 kA (acc. to IEC/EN 61009)  
 U<sub>e</sub> = 400/415V: I<sub>cu</sub> (NZMN2) = 50 kA (acc. to IEC/EN 60947-2)

Short circuit currents in kA.

FRBdM	NZMH1-A...		
	U <sub>e</sub> = 240 V		
	B	C	D
6	-	40	40
10	40	40	40
13	40	40	40
16	25	25	25
20	-	15	15
25	-	10	10

U<sub>e</sub> = 240V: I<sub>cn</sub> (FRBdM) = 10 kA (acc. to IEC/EN 61009)  
 U<sub>e</sub> = 400/415V: I<sub>cu</sub> (NZMH2) = 150 kA (acc. to IEC/EN 60947-2)

## Back-up Protection between FRBdM and NH00-125 A, 240 V

Short circuit currents in kA.

FRBdM	NH00-125A gG		
	U <sub>e</sub> = 240 V		
	B	C	D
6	-	40	40
10	40	40	40
13	40	40	40
16	40	40	40
20	-	20	20
25	-	10	10

U<sub>e</sub> = 240V: I<sub>cn</sub> (FRBdM) = 10 kA (acc. to IEC/EN 61009)  
 AC 500 V (NH00-125A gG) = 120 kA (acc. to IEC/EN 60269)

## Back-up Protection between FRBdM and PLSM-OV63, 230 V

Short circuit currents in kA.

FRBdM	PLSM-OV63/2,3,4,3N		
	IT-System U = 230 V		
	B	C	D
6	-	10	10
10	10	10	10
13	10	10	10
16	10	10	10
20	-	10	10
25	-	10	10

U<sub>e</sub> = 240V: I<sub>cn</sub> (FRBdM) = 10 kA (acc. to IEC/EN 61009)  
 U<sub>e</sub> = 230/400V: I<sub>cu</sub> (PLSM-OV63) = 10 kA (acc. to IEC/EN 60947-2)

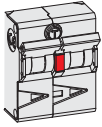
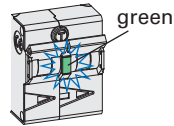
## Selectivity-limit current I<sub>s</sub> [kA] for selectivity between FRBdM and PLSM-OV/PLHT-OV...

Short circuit currents in kA, Rated currents of fuses in A.

FRBdM	PLSM-OV/PLHT-OV						
	I <sub>cu</sub> = 10 kA						
	25	32	40	50	56	63	80
B10	1.5	1.5	1.5	1.5	1.5	1.5	1.5
B13	1.5	1.5	1.5	1.5	1.5	1.5	1.5
B16	1.5	1.5	1.5	1.5	1.5	1.5	1.5
C+D6	1.5	1.5	1.5	1.5	1.5	1.5	1.5
C+D10	1.5	1.5	1.5	1.5	1.5	1.5	1.5
C+D13	1.5	1.5	1.5	1.5	1.5	1.5	1.5
C+D16	1.5	1.5	1.5	1.5	1.5	1.5	1.5
C+D20	-	1.5	1.5	1.5	1.5	1.5	1.5
C+D25	-	-	1.5	1.5	1.5	1.5	1.5

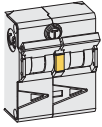
## Local Indication RCD

Self check (power ON) 2 s ->



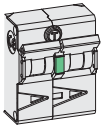
red

$$I_{\Delta} \geq 50\% I_{\Delta n}$$



amber

$$I_{\Delta} = 30-50\% I_{\Delta n}$$

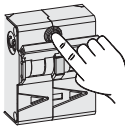


green

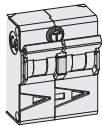
$$I_{\Delta} \leq 30\% I_{\Delta n}$$

## Service Mode (measuring of residual current $I_{\Delta}$ )

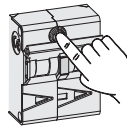
Pressing test button twice to activate Service-Mode



press  
(0.1 - 0.4 s)



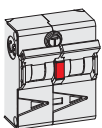
release  
(0.1 - 0.4 s)



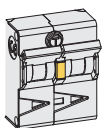
press  
(0.1 - 0.4 s)

Measurement delimiter	red
Measurement delimiter ON time	400 ms
10 mA measurement color	amber
1 mA measurement color	green
Double-pressing test button to activate Service Mode	press (0.1-0.4 s) -> release (0.1-0.4 s) -> press (0.1-0.4 s)
Time duration of Service Mode	4 min (during activated Service Mode all protection functions are still working)

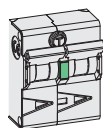
## Lamp test



red

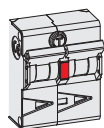


amber



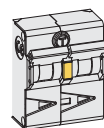
green

2 s ->



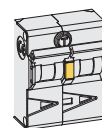
red

100 mA



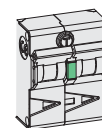
amber

10 mA



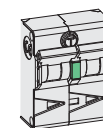
amber

10 mA



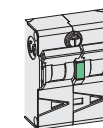
green

1 mA



green

1 mA



green

1 mA

2 s ->

123 mA

## Combined RCD/MCB Devices FRBmM, 1+N-pole

SG13711



- High-quality residual current device / miniature circuit breaker combination, line voltage-independent
- Contact position indicator red - green
- Fault current tripping indicator
- Guide for secure terminal connection
- 3-position DIN rail clip, permits removal from existing busbar system
- Comprehensive range of accessories suitable for subsequent installation
- Wide variety of rated tripping currents
- Rated currents up to 40 A
- Tripping characteristics B, C, D
- Rated breaking capacity 10 kA

## Combined RCD/MCB Devices FRBmM type AC

10 kA, 1+N-pole

Conditionally surge current-proof 250 A, type AC



SG13711



$I_n/I_{\Delta n}$   
(A)

Type  
Designation

Article No.

Units  
per  
package

### Characteristic B

6/0.01	FRBmM-B6/1N/001	170971	1/60
10/0.01	FRBmM-B10/1N/001	170972	1/60
13/0.01	FRBmM-B13/1N/001	170973	1/60
16/0.01	FRBmM-B16/1N/001	170974	1/60
6/0.03	FRBmM-B6/1N/003	170920	1/60
10/0.03	FRBmM-B10/1N/003	170695	1/60
13/0.03	FRBmM-B13/1N/003	170696	1/60
16/0.03	FRBmM-B16/1N/003	170697	1/60
20/0.03	FRBmM-B20/1N/003	170698	1/60
25/0.03	FRBmM-B25/1N/003	170699	1/60
32/0.03	FRBmM-B32/1N/003	170700	1/60
40/0.03	FRBmM-B40/1N/003	170701	1/60
6/0.1	FRBmM-B6/1N/01	170656	1/60
10/0.1	FRBmM-B10/1N/01	170657	1/60
13/0.1	FRBmM-B13/1N/01	170658	1/60
16/0.1	FRBmM-B16/1N/01	170659	1/60
20/0.1	FRBmM-B20/1N/01	170660	1/60
25/0.1	FRBmM-B25/1N/01	170661	1/60
32/0.1	FRBmM-B32/1N/01	170662	1/60
40/0.1	FRBmM-B40/1N/01	170663	1/60
6/0.3	FRBmM-B6/1N/03	170551	1/60
10/0.3	FRBmM-B10/1N/03	170600	1/60
13/0.3	FRBmM-B13/1N/03	170601	1/60
16/0.3	FRBmM-B16/1N/03	170602	1/60
20/0.3	FRBmM-B20/1N/03	170603	1/60
25/0.3	FRBmM-B25/1N/03	170604	1/60
32/0.3	FRBmM-B32/1N/03	170605	1/60
40/0.3	FRBmM-B40/1N/03	170606	1/60

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### Characteristic C

2/0.01	FRBmM-C2/1N/001	170979	1/60
4/0.01	FRBmM-C4/1N/001	170980	1/60
6/0.01	FRBmM-C6/1N/001	170981	1/60
10/0.01	FRBmM-C10/1N/001	170982	1/60
13/0.01	FRBmM-C13/1N/001	170983	1/60
16/0.01	FRBmM-C16/1N/001	170984	1/60
2/0.03	FRBmM-C2/1N/003	170532	1/60
4/0.03	FRBmM-C4/1N/003	170533	1/60
6/0.03	FRBmM-C6/1N/003	170534	1/60
10/0.03	FRBmM-C10/1N/003	170535	1/60
13/0.03	FRBmM-C13/1N/003	170536	1/60
16/0.03	FRBmM-C16/1N/003	170537	1/60
20/0.03	FRBmM-C20/1N/003	170538	1/60
25/0.03	FRBmM-C25/1N/003	170539	1/60
32/0.03	FRBmM-C32/1N/003	170612	1/60
40/0.03	FRBmM-C40/1N/003	170613	1/60
2/0.1	FRBmM-C2/1N/01	170672	1/60
4/0.1	FRBmM-C4/1N/01	170673	1/60
6/0.1	FRBmM-C6/1N/01	170674	1/60
10/0.1	FRBmM-C10/1N/01	170675	1/60
13/0.1	FRBmM-C13/1N/01	170676	1/60
16/0.1	FRBmM-C16/1N/01	170677	1/60
20/0.1	FRBmM-C20/1N/01	170678	1/60
25/0.1	FRBmM-C25/1N/01	170679	1/60
32/0.1	FRBmM-C32/1N/01	170680	1/60
40/0.1	FRBmM-C40/1N/01	170681	1/60
2/0.3	FRBmM-C2/1N/03	170561	1/60
4/0.3	FRBmM-C4/1N/03	170562	1/60
6/0.3	FRBmM-C6/1N/03	170563	1/60
10/0.3	FRBmM-C10/1N/03	170564	1/60
13/0.3	FRBmM-C13/1N/03	170565	1/60
16/0.3	FRBmM-C16/1N/03	170566	1/60
20/0.3	FRBmM-C20/1N/03	170567	1/60
25/0.3	FRBmM-C25/1N/03	170568	1/60
32/0.3	FRBmM-C32/1N/03	170569	1/60
40/0.3	FRBmM-C40/1N/03	170570	1/60

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## Characteristic D

2/0.01	FRBmM-D2/1N/001	170922	1/60
4/0.01	FRBmM-D4/1N/001	170909	1/60
6/0.01	FRBmM-D6/1N/001	170910	1/60
10/0.01	FRBmM-D10/1N/001	170911	1/60
13/0.01	FRBmM-D13/1N/001	170912	1/60
16/0.01	FRBmM-D16/1N/001	170913	1/60
2/0.03	FRBmM-D2/1N/003	170636	1/60
4/0.03	FRBmM-D4/1N/003	170637	1/60
6/0.03	FRBmM-D6/1N/003	170638	1/60
10/0.03	FRBmM-D10/1N/003	170639	1/60
13/0.03	FRBmM-D13/1N/003	170640	1/60
16/0.03	FRBmM-D16/1N/003	170641	1/60
20/0.03	FRBmM-D20/1N/003	170642	1/60
2/0.1	FRBmM-D2/1N/01	170692	1/60
4/0.1	FRBmM-D4/1N/01	170693	1/60
6/0.1	FRBmM-D6/1N/01	170694	1/60
10/0.1	FRBmM-D10/1N/01	170540	1/60
13/0.1	FRBmM-D13/1N/01	170541	1/60
16/0.1	FRBmM-D16/1N/01	170542	1/60
20/0.1	FRBmM-D20/1N/01	170543	1/60
2/0.3	FRBmM-D2/1N/03	170587	1/60
4/0.3	FRBmM-D4/1N/03	170588	1/60
6/0.3	FRBmM-D6/1N/03	170589	1/60
10/0.3	FRBmM-D10/1N/03	170590	1/60
13/0.3	FRBmM-D13/1N/03	170591	1/60
16/0.3	FRBmM-D16/1N/03	170592	1/60
20/0.3	FRBmM-D20/1N/03	170593	1/60

## Combined RCD/MCB Devices FRBmM type A

10 kA, 1+N-pole

Conditionally surge current-proof 250 A, sensitive to residual pulsating DC, type A



SG13711



$I_n/I_{\Delta n}$   
(A)

Type  
Designation

Article No.

Units  
per  
package

### Characteristic B

6/0.01	FRBmM-B6/1N/001-A	170975	1/60
10/0.01	FRBmM-B10/1N/001-A	170976	1/60
13/0.01	FRBmM-B13/1N/001-A	170977	1/60
16/0.01	FRBmM-B16/1N/001-A	170978	1/60
6/0.03	FRBmM-B6/1N/003-A	170702	1/60
10/0.03	FRBmM-B10/1N/003-A	170703	1/60
13/0.03	FRBmM-B13/1N/003-A	170704	1/60
16/0.03	FRBmM-B16/1N/003-A	170705	1/60
20/0.03	FRBmM-B20/1N/003-A	170706	1/60
25/0.03	FRBmM-B25/1N/003-A	170707	1/60
32/0.03	FRBmM-B32/1N/003-A	170708	1/60
40/0.03	FRBmM-B40/1N/003-A	170709	1/60
6/0.1	FRBmM-B6/1N/01-A	170664	1/60
10/0.1	FRBmM-B10/1N/01-A	170665	1/60
13/0.1	FRBmM-B13/1N/01-A	170666	1/60
16/0.1	FRBmM-B16/1N/01-A	170667	1/60
20/0.1	FRBmM-B20/1N/01-A	170668	1/60
25/0.1	FRBmM-B25/1N/01-A	170669	1/60
32/0.1	FRBmM-B32/1N/01-A	170670	1/60
40/0.1	FRBmM-B40/1N/01-A	170671	1/60
6/0.3	FRBmM-B6/1N/03-A	170607	1/60
10/0.3	FRBmM-B10/1N/03-A	170608	1/60
13/0.3	FRBmM-B13/1N/03-A	170609	1/60
16/0.3	FRBmM-B16/1N/03-A	170610	1/60
20/0.3	FRBmM-B20/1N/03-A	170611	1/60
25/0.3	FRBmM-B25/1N/03-A	170552	1/60
32/0.3	FRBmM-B32/1N/03-A	170553	1/60
40/0.3	FRBmM-B40/1N/03-A	170554	1/60

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### Characteristic C

2/0.01	FRBmM-C2/1N/001-A	170904	1/60
4/0.01	FRBmM-C4/1N/001-A	170905	1/60
6/0.01	FRBmM-C6/1N/001-A	170906	1/60
10/0.01	FRBmM-C10/1N/001-A	170907	1/60
13/0.01	FRBmM-C13/1N/001-A	170908	1/60
16/0.01	FRBmM-C16/1N/001-A	170921	1/60
2/0.03	FRBmM-C2/1N/003-A	170614	1/60
4/0.03	FRBmM-C4/1N/003-A	170615	1/60
6/0.03	FRBmM-C6/1N/003-A	170616	1/60
10/0.03	FRBmM-C10/1N/003-A	170617	1/60
13/0.03	FRBmM-C13/1N/003-A	170618	1/60
16/0.03	FRBmM-C16/1N/003-A	170619	1/60
20/0.03	FRBmM-C20/1N/003-A	170620	1/60
25/0.03	FRBmM-C25/1N/003-A	170621	1/60
32/0.03	FRBmM-C32/1N/003-A	170622	1/60
40/0.03	FRBmM-C40/1N/003-A	170623	1/60
2/0.1	FRBmM-C2/1N/01-A	170682	1/60
4/0.1	FRBmM-C4/1N/01-A	170683	1/60
6/0.1	FRBmM-C6/1N/01-A	170684	1/60
10/0.1	FRBmM-C10/1N/01-A	170685	1/60
13/0.1	FRBmM-C13/1N/01-A	170686	1/60
16/0.1	FRBmM-C16/1N/01-A	170687	1/60
20/0.1	FRBmM-C20/1N/01-A	170688	1/60
25/0.1	FRBmM-C25/1N/01-A	170689	1/60
32/0.1	FRBmM-C32/1N/01-A	170690	1/60
40/0.1	FRBmM-C40/1N/01-A	170691	1/60
2/0.3	FRBmM-C2/1N/03-A	170571	1/60
4/0.3	FRBmM-C4/1N/03-A	170572	1/60
6/0.3	FRBmM-C6/1N/03-A	170573	1/60
10/0.3	FRBmM-C10/1N/03-A	170574	1/60
13/0.3	FRBmM-C13/1N/03-A	170575	1/60
16/0.3	FRBmM-C16/1N/03-A	170576	1/60
20/0.3	FRBmM-C20/1N/03-A	170577	1/60
25/0.3	FRBmM-C25/1N/03-A	170578	1/60
32/0.3	FRBmM-C32/1N/03-A	170579	1/60
40/0.3	FRBmM-C40/1N/03-A	170580	1/60



SG13711



## Characteristic D

2/0.01	FRBmM-D2/1N/001-A	170914	1/60
4/0.01	FRBmM-D4/1N/001-A	170915	1/60
6/0.01	FRBmM-D6/1N/001-A	170916	1/60
10/0.01	FRBmM-D10/1N/001-A	170917	1/60
13/0.01	FRBmM-D13/1N/001-A	170918	1/60
16/0.01	FRBmM-D16/1N/001-A	170919	1/60
2/0.03	FRBmM-D2/1N/003-A	170643	1/60
4/0.03	FRBmM-D4/1N/003-A	170644	1/60
6/0.03	FRBmM-D6/1N/003-A	170645	1/60
10/0.03	FRBmM-D10/1N/003-A	170646	1/60
13/0.03	FRBmM-D13/1N/003-A	170647	1/60
16/0.03	FRBmM-D16/1N/003-A	170648	1/60
20/0.03	FRBmM-D20/1N/003-A	170649	1/60
2/0.1	FRBmM-D2/1N/01-A	170544	1/60
4/0.1	FRBmM-D4/1N/01-A	170545	1/60
6/0.1	FRBmM-D6/1N/01-A	170546	1/60
10/0.1	FRBmM-D10/1N/01-A	170547	1/60
13/0.1	FRBmM-D13/1N/01-A	170548	1/60
16/0.1	FRBmM-D16/1N/01-A	170549	1/60
20/0.1	FRBmM-D20/1N/01-A	170550	1/60
2/0.3	FRBmM-D2/1N/03-A	170594	1/60
4/0.3	FRBmM-D4/1N/03-A	170595	1/60
6/0.3	FRBmM-D6/1N/03-A	170596	1/60
10/0.3	FRBmM-D10/1N/03-A	170597	1/60
13/0.3	FRBmM-D13/1N/03-A	170598	1/60
16/0.3	FRBmM-D16/1N/03-A	170599	1/60
20/0.3	FRBmM-D20/1N/03-A	170868	1/60

## Combined RCD/MCB Devices FRBmM type G

10 kA, 1+N-pole

Surge current-proof 3 kA, type G (ÖVE E 8601) 

SG13711



$I_n/I_{\Delta n}$   
(A)

Type  
Designation

Article No.

Units  
per  
package

### Characteristic B

13/0.03	FRBmM-B13/1N/003-G	170710	1/60
16/0.03	FRBmM-B16/1N/003-G	170711	1/60
20/0.03	FRBmM-B20/1N/003-G	170712	1/60
25/0.03	FRBmM-B25/1N/003-G	170713	1/60
32/0.03	FRBmM-B32/1N/003-G	170714	1/60
40/0.03	FRBmM-B40/1N/003-G	170715	1/60
13/0.3	FRBmM-B13/1N/03-G	170555	1/60
16/0.3	FRBmM-B16/1N/03-G	170556	1/60
20/0.3	FRBmM-B20/1N/03-G	170557	1/60
25/0.3	FRBmM-B25/1N/03-G	170558	1/60
32/0.3	FRBmM-B32/1N/03-G	170559	1/60
40/0.3	FRBmM-B40/1N/03-G	170560	1/60

SG13711



### Characteristic C

13/0.03	FRBmM-C13/1N/003-G	170624	1/60
16/0.03	FRBmM-C16/1N/003-G	170625	1/60
20/0.03	FRBmM-C20/1N/003-G	170626	1/60
25/0.03	FRBmM-C25/1N/003-G	170627	1/60
32/0.03	FRBmM-C32/1N/003-G	170628	1/60
40/0.03	FRBmM-C40/1N/003-G	170629	1/60
13/0.3	FRBmM-C13/1N/03-G	170581	1/60
16/0.3	FRBmM-C16/1N/03-G	170582	1/60
20/0.3	FRBmM-C20/1N/03-G	170583	1/60
25/0.3	FRBmM-C25/1N/03-G	170584	1/60
32/0.3	FRBmM-C32/1N/03-G	170585	1/60
40/0.3	FRBmM-C40/1N/03-G	170586	1/60

SG13711



### Characteristic D




13/0.03	FRBmM-D13/1N/003-G	170650	1/60
16/0.03	FRBmM-D16/1N/003-G	170651	1/60
20/0.03	FRBmM-D20/1N/003-G	170652	1/60
13/0.3	FRBmM-D13/1N/03-G	170869	1/60
16/0.3	FRBmM-D16/1N/03-G	170870	1/60
20/0.3	FRBmM-D20/1N/03-G	170871	1/60

## Combined RCD/MCB Devices FRBmM type G/A

10 kA, 1+N-pole

Surge current-proof 3 kA, sensitive to residual pulsating DC, type G/A (ÖVE E 8601)



	$I_n/I_{\Delta n}$ (A)	Type Designation	Article No.	Units per package
<b>Characteristic B</b>				
	13/0.03	FRBmM-B13/1N/003-G/A	170716	1/60
	16/0.03	FRBmM-B16/1N/003-G/A	170717	1/60
	20/0.03	FRBmM-B20/1N/003-G/A	170528	1/60
	25/0.03	FRBmM-B25/1N/003-G/A	170529	1/60
	32/0.03	FRBmM-B32/1N/003-G/A	170530	1/60
	40/0.03	FRBmM-B40/1N/003-G/A	170531	1/60
<b>Characteristic C</b>				
	13/0.03	FRBmM-C13/1N/003-G/A	170630	1/60
	16/0.03	FRBmM-C16/1N/003-G/A	170631	1/60
	20/0.03	FRBmM-C20/1N/003-G/A	170632	1/60
	25/0.03	FRBmM-C25/1N/003-G/A	170633	1/60
	32/0.03	FRBmM-C32/1N/003-G/A	170634	1/60
	40/0.03	FRBmM-C40/1N/003-G/A	170635	1/60
<b>Characteristic D</b>				
	13/0.03	FRBmM-D13/1N/003-G/A	170653	1/60
	16/0.03	FRBmM-D16/1N/003-G/A	170654	1/60
	20/0.03	FRBmM-D20/1N/003-G/A	170655	1/60

## Specifications | Combined RCD/MCB Devices FRBmM, 1+N-pole

### Description

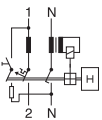
- Combined RCD/MCB device
- Line voltage-independent tripping
- Compatible with standard busbar
- Twin-purpose terminal (lift/open-mouthed) above and below
- Busbar positioning optionally above or below
- Free terminal space despite installed busbar
- Guide for secure terminal connection
- Switching toggle (MCB component) in colour designating the rated current
- Contact position indicator red - green
- Comprehensive range of accessories suitable for subsequent installation
- Nameplate
- The test key "T" must be pressed every half year. The system operator must be informed of this obligation and his responsibility in a way that can be proven. The yearly test interval is only valid for residential and similar applications. Under all other conditions (e.g. damply or dusty environment), it's recommended to test in shorter intervals (e.g. monthly).
- Pressing the test key "T" serves the only purpose of function testing the residual current device (RCD). This test does not make earthing resistance measurement ( $R_E$ ), or proper checking of the earth conductor condition redundant, which must be performed separately.
- **Type -A:** Protects against special forms of residual pulsating DC which have not been smoothed.
- **Type -G:** High reliability against unwanted tripping. Compulsory for any circuit where personal injury or damage to property may occur in case of unwanted tripping (ÖVE/ÖNORM E 8001-1 § 12.1.6).

### Accessories:

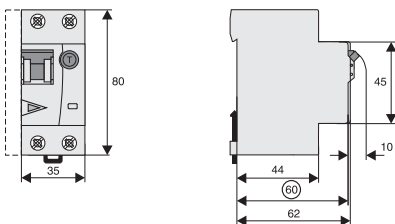
Auxiliary switch for subsequent installation	ZP-IHK	286052
	ZP-WHK	286053
Tripping signal switch for subsequent installation	ZP-NHK	248437
Shunt trip release	ZP-ASA/..	248438, 248439
Tripping module	Z-KAM	248294
Switching interlock	IS/SPE-1TE	101911
Screws lock 2MU		221954800

### Connection diagram

1+N-pole



### Dimensions (mm)



## Technical Data

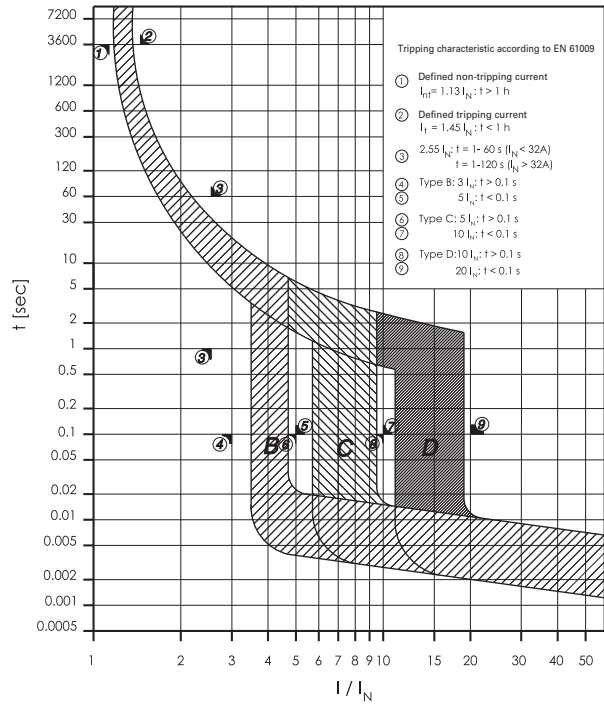
		<b>FRBmM, 1+N-pole</b>
<b>Electrical</b>		
Design according to		IEC/EN 61009
Current test marks as printed onto the device		
Tripping line voltage-independent		instantaneous 250A (8/20 $\mu$ s), surge current-proof
Type G		10 ms delay 3kA (8/20 $\mu$ s), surge current-proof
Rated voltage	$U_n$	240V AC, 50Hz
Rated tripping current	$I_{\Delta n}$	10, 30, 100, 300 mA
Rated non-tripping current	$I_{\Delta no}$	0.5 $I_{\Delta n}$
Sensitivity		AC and pulsating DC
Selectivity class		3
Rated breaking capacity	$I_{cn}$	10 kA
Rated current		2 - 40 A
Rated impulse withstand voltage	$U_{imp}$	4 kV (1.2/50 $\mu$ s)
Characteristic		B, C, D
Maximum back-up fuse (short circuit)		100 A gL (>10 kA)
<b>Endurance</b>		
electrical components		$\geq$ 4,000 operating cycles
mechanical components		$\geq$ 10,000 operating cycles
<b>Mechanical</b>		
Frame size		45 mm
Device height		80 mm
Device width		35 mm (2MU)
Mounting		3-position DIN rail clip, permits removal from existing busbar system
Degree of protection switch		IP20
Degree of protection, built-in		IP40
Upper and lower terminals		open mouthed/lift terminals
Terminal protection		finger and hand touch safe, BGV A3, ÖVE-EN 6
Terminal capacity		1 - 25 mm <sup>2</sup>
Terminal torque		2 - 2.4 Nm
Busbar thickness		0.8 - 2 mm
Tripping temperature		-25°C to +40°C
Storage- and transport temperature		-35°C to +60°C
Climatic conditions		acc. to IEC 68-2 (25..55°C / 90..95% RH)

## Load Capacity FRBmM-../1N/

Effect of ambient temperature (MCB component)

I <sub>n</sub> [A]	Ambient temperature T [°C]								
	-25	-20	-10	0	10	20	30	35	40
2	2.5	2.4	2.3	2.2	2.2	2.1	2.0	2.0	1.9
4	4.9	4.8	4.7	4.5	4.3	4.2	4.0	3.9	3.9
6	7.4	7.2	7.0	6.7	6.5	6.3	6.0	5.9	5.8
10	12	12	12	11	11	10	10	9.9	9.7
13	16	16	15	15	14	14	13	13	13
16	20	19	19	18	17	17	16	16	15
20	25	24	23	22	22	21	20	20	19
25	31	30	29	28	27	26	25	25	24
32	40	38	37	36	35	33	32	32	31
40	49	48	47	45	43	42	40	39	39

## Tripping Characteristic FRBmM-../1N/, Characteristics B, C, and D



## Short Circuit Selectivity FRBmM-../1N/ towards DII-DIV fuse link

In case of short circuit, there is selectivity between the combined RCD/MCB devices FRBmM-../1N/ and the upstream fuses up to the specified values of the selectivity limit current I<sub>s</sub> [kA] (i. e. in case of short-circuit currents I<sub>ks</sub> under I<sub>s</sub>, only the MCB will trip, in case of short circuit currents above this value both protective devices will respond).

\*) basically in accordance with EN 60898-1 D.5.2.b

Short circuit selectivity **characteristic B** towards fuse link **DII-DIV\***

FRBmM	DII-DIV gL/gG								
I <sub>n</sub> [A]	10	16	20	25	35	50	63	80	100
6	<0.5 <sup>1)</sup>	0.7	1.0	2.9	6.9	10.0 <sup>2)</sup>	10.0 <sup>2)</sup>	10.0 <sup>2)</sup>	10.0 <sup>2)</sup>
10	<0.5 <sup>1)</sup>	0.6	0.9	1.9	3.3	7.0	10.0 <sup>2)</sup>	10.0 <sup>2)</sup>	10.0 <sup>2)</sup>
13	<0.5 <sup>1)</sup>	0.5	0.7	1.6	2.8	5.7	9.0	10.0 <sup>2)</sup>	10.0 <sup>2)</sup>
16	<0.5 <sup>1)</sup>	0.7	1.4	2.4	4.4	7.0	10.0 <sup>2)</sup>	10.0 <sup>2)</sup>	10.0 <sup>2)</sup>
20	<0.5 <sup>1)</sup>	1.3	2.2	4.0	6.3	10.0 <sup>2)</sup>	10.0 <sup>2)</sup>	10.0 <sup>2)</sup>	10.0 <sup>2)</sup>
25	<0.5 <sup>1)</sup>	1.3	2.1	3.8	5.8	10.0 <sup>2)</sup>	10.0 <sup>2)</sup>	10.0 <sup>2)</sup>	10.0 <sup>2)</sup>
32	<0.5 <sup>1)</sup>	2.0	3.5	5.2	9.5	10.0 <sup>2)</sup>	10.0 <sup>2)</sup>	10.0 <sup>2)</sup>	10.0 <sup>2)</sup>
40	<0.5 <sup>1)</sup>	3.1	4.5	8.1	10.0 <sup>2)</sup>	10.0 <sup>2)</sup>	10.0 <sup>2)</sup>	10.0 <sup>2)</sup>	10.0 <sup>2)</sup>

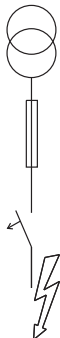
Short circuit selectivity **characteristic C** towards fuse link **DII-DIV\***

FRBmM	DII-DIV gL/gG								
I <sub>n</sub> [A]	10	16	20	25	35	50	63	80	100
2	<0.5 <sup>1)</sup>	<0.5 <sup>1)</sup>	1.7	6.0	10.0 <sup>2)</sup>	10.0 <sup>2)</sup>	10.0 <sup>2)</sup>	10.0 <sup>2)</sup>	10.0 <sup>2)</sup>
4	<0.5 <sup>1)</sup>	<0.5 <sup>1)</sup>	0.7	1.3	4.2	8.5	10.0 <sup>2)</sup>	10.0 <sup>2)</sup>	10.0 <sup>2)</sup>
6	<0.5 <sup>1)</sup>	<0.5 <sup>1)</sup>	0.6	1.0	2.9	5.8	10.0 <sup>2)</sup>	10.0 <sup>2)</sup>	10.0 <sup>2)</sup>
10	<0.5 <sup>1)</sup>	<0.5 <sup>1)</sup>	0.7	1.5	2.6	5.3	9.0	10.0 <sup>2)</sup>	10.0 <sup>2)</sup>
13	<0.5 <sup>1)</sup>	<0.5 <sup>1)</sup>	1.4	2.3	4.6	7.6	10.0 <sup>2)</sup>	10.0 <sup>2)</sup>	10.0 <sup>2)</sup>
16	<0.5 <sup>1)</sup>	<0.5 <sup>1)</sup>	1.2	1.8	3.4	5.5	10.0 <sup>2)</sup>	10.0 <sup>2)</sup>	10.0 <sup>2)</sup>
20	<0.5 <sup>1)</sup>	<0.5 <sup>1)</sup>	1.2	1.7	3.1	5.0	10.0 <sup>2)</sup>	10.0 <sup>2)</sup>	10.0 <sup>2)</sup>
25	<0.5 <sup>1)</sup>	<0.5 <sup>1)</sup>	1.6	2.9	4.6	10.0 <sup>2)</sup>	10.0 <sup>2)</sup>	10.0 <sup>2)</sup>	10.0 <sup>2)</sup>
32	<0.5 <sup>1)</sup>	<0.5 <sup>1)</sup>	2.3	3.4	7.7	10.0 <sup>2)</sup>	10.0 <sup>2)</sup>	10.0 <sup>2)</sup>	10.0 <sup>2)</sup>
40	<0.5 <sup>1)</sup>	<0.5 <sup>1)</sup>	2.9	6.2	10.0 <sup>2)</sup>	10.0 <sup>2)</sup>	10.0 <sup>2)</sup>	10.0 <sup>2)</sup>	10.0 <sup>2)</sup>

<sup>1)</sup> Selectivity limit current I<sub>s</sub> under 0.5 kA

<sup>2)</sup> Selectivity limit current I<sub>s</sub> = rated breaking capacity I<sub>cn</sub> of the RCD/MCB device

Darker areas: no selectivity



Short circuit selectivity **characteristic D** towards fuse link **DII-DIV\***

FRBmM	DII-DIV gL/gG								
I <sub>n</sub> [A]	10	16	20	25	35	50	63	80	100
2	<0.5 <sup>1)</sup>	<0.5 <sup>1)</sup>	1.0	1.8	6.5	10.0 <sup>2)</sup>	10.0 <sup>2)</sup>	10.0 <sup>2)</sup>	10.0 <sup>2)</sup>
4	<0.5 <sup>1)</sup>	<0.5 <sup>1)</sup>	0.8	1.3	3.8	9.0	10.0 <sup>2)</sup>	10.0 <sup>2)</sup>	10.0 <sup>2)</sup>
6	<0.5 <sup>1)</sup>	<0.5 <sup>1)</sup>	0.6	0.9	2.3	4.7	10.0 <sup>2)</sup>	10.0 <sup>2)</sup>	10.0 <sup>2)</sup>
10	<0.5 <sup>1)</sup>	<0.5 <sup>1)</sup>	0.7	1.5	2.6	5.5	9.4	10.0 <sup>2)</sup>	10.0 <sup>2)</sup>
13	<0.5 <sup>1)</sup>	<0.5 <sup>1)</sup>	1.4	2.2	4.4	7.0	10.0 <sup>2)</sup>	10.0 <sup>2)</sup>	10.0 <sup>2)</sup>
16	<0.5 <sup>1)</sup>	<0.5 <sup>1)</sup>	2.0	3.7	5.5	10.0 <sup>2)</sup>	10.0 <sup>2)</sup>	10.0 <sup>2)</sup>	10.0 <sup>2)</sup>
20	<0.5 <sup>1)</sup>	<0.5 <sup>1)</sup>	1.9	3.4	5.0	10.0 <sup>2)</sup>	10.0 <sup>2)</sup>	10.0 <sup>2)</sup>	10.0 <sup>2)</sup>

## Short Circuit Selectivity FRBmM-../1N/ towards D01-D03 fuse link

In case of short circuit, there is selectivity between the combined RCD/MCB devices FRBmM-../1N/ and the upstream fuses up to the specified values of the selectivity limit current  $I_s$  [kA] (i. e. in case of short-circuit currents  $I_{ks}$  under  $I_s$ , only the MCB will trip, in case of short circuit currents above this value both protective devices will respond).

\*) basically in accordance with EN 60898-1 D.5.2.b

Short circuit selectivity **characteristic B** towards fuse link **D01-D03\***)

FRBmM	D01-D03 gL/gG								
	10	16	20	25	35	50	63	80	100
<b>6</b>		<0.5 <sup>1)</sup>	0.5	0.8	2.4	8.2	10.0 <sup>2)</sup>	10.0 <sup>2)</sup>	10.0 <sup>2)</sup>
<b>10</b>			0.5	0.8	1.6	3.7	6.0	10.0 <sup>2)</sup>	10.0 <sup>2)</sup>
<b>13</b>				0.6	0.7	1.4	3.0	4.7	9.0
<b>16</b>					0.6	1.2	2.6	3.9	7.0
<b>20</b>						1.2	2.5	3.6	6.2
<b>25</b>							1.2	2.3	3.3
<b>32</b>								2.3	3.1
<b>40</b>									2.8

Short circuit selectivity **characteristic C** towards fuse link **D01-D03\***)

FRBmM	D01-D03 gL/gG								
	10	16	20	25	35	50	63	80	100
<b>2</b>	<0.5 <sup>1)</sup>	0.5	0.5	2.4	10.0 <sup>2)</sup>	10.0 <sup>2)</sup>	10.0 <sup>2)</sup>	10.0 <sup>2)</sup>	10.0 <sup>2)</sup>
<b>4</b>	<0.5 <sup>1)</sup>	<0.5 <sup>1)</sup>	<0.5 <sup>1)</sup>	0.9	3.4	9.5	10.0 <sup>2)</sup>	10.0 <sup>2)</sup>	10.0 <sup>2)</sup>
<b>6</b>		<0.5 <sup>1)</sup>	<0.5 <sup>1)</sup>	0.8	2.3	6.5	10.0 <sup>2)</sup>	10.0 <sup>2)</sup>	10.0 <sup>2)</sup>
<b>10</b>			<0.5	0.6	1.3	2.9	4.5	8.9	10.0 <sup>2)</sup>
<b>13</b>						1.2	2.5	3.9	7.6
<b>16</b>							1.0	2.1	3.0
<b>20</b>								1.0	2.0
<b>25</b>									1.9
<b>32</b>									
<b>40</b>									

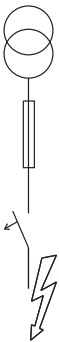
Short circuit selectivity **characteristic D** towards fuse link **D01-D03\***)

FRBmM	D01-D03 gL/gG								
	10	16	20	25	35	50	63	80	100
<b>2</b>	<0.5 <sup>1)</sup>	0.5	0.8	1.2	5.0	10.0 <sup>2)</sup>	10.0 <sup>2)</sup>	10.0 <sup>2)</sup>	10.0 <sup>2)</sup>
<b>4</b>		<0.5 <sup>1)</sup>	0.7	1.0	3.0	10.0 <sup>2)</sup>	10.0 <sup>2)</sup>	10.0 <sup>2)</sup>	10.0 <sup>2)</sup>
<b>6</b>			0.5	0.8	1.9	5.5	10.0 <sup>2)</sup>	10.0 <sup>2)</sup>	10.0 <sup>2)</sup>
<b>10</b>				0.6	1.3	2.9	4.7	9.2	10.0 <sup>2)</sup>
<b>13</b>					1.2	2.5	3.8	7.0	10.0 <sup>2)</sup>
<b>16</b>						2.3	3.2	5.5	10.0 <sup>2)</sup>
<b>20</b>							2.2	3.0	3.9

<sup>1)</sup> Selectivity limit current  $I_s$  under 0.5 kA

<sup>2)</sup> Selectivity limit current  $I_s$  = rated breaking capacity  $I_{cn}$  of the RCD/MCB device

Darker areas: no selectivity



## Short Circuit Selectivity FRBmM-../1N/ towards NH-00 fuse link

In case of short circuit, there is selectivity between the combined RCD/MCB devices FRBmM-../1N/ and the upstream fuses up to the specified values of the selectivity limit current  $I_s$  [kA] (i. e. in case of short-circuit currents  $I_{ks}$  under  $I_s$ , only the MCB will trip, in case of short circuit currents above this value both protective devices will respond).

\*) basically in accordance with EN 60898-1 D.5.2.b

Short circuit selectivity **characteristic B** towards fuse link **NH-00\***

FRBmM	NH-00 gL/gG											
$I_n$ [A]	16	20	25	32	35	40	50	63	80	100	125	160
6	<0.5 <sup>1)</sup>	0.5	0.8	1.4	2.2	3.3	7.0	10.0 <sup>2)</sup>	10.0 <sup>2)</sup>	10.0 <sup>2)</sup>	10.0 <sup>2)</sup>	10.0 <sup>2)</sup>
10		<0.5 <sup>1)</sup>	0.7	0.9	1.5	2.1	3.4	4.3	7.3	10.0 <sup>2)</sup>	10.0 <sup>2)</sup>	10.0 <sup>2)</sup>
13			<0.5 <sup>1)</sup>	0.6	0.8	1.4	1.8	2.8	3.6	5.7	10.0 <sup>2)</sup>	10.0 <sup>2)</sup>
16				0.6	0.7	1.2	1.5	2.4	3.0	4.5	10.0 <sup>2)</sup>	10.0 <sup>2)</sup>
20					0.7	1.1	1.5	2.2	2.8	4.2	9.2	10.0 <sup>2)</sup>
25						0.7	1.1	1.4	2.1	2.6	4.0	8.2
32							1.0	1.4	2.0	2.5	3.7	7.1
40								2.3	3.4	6.2	8.8	10.0 <sup>2)</sup>

Short circuit selectivity **characteristic C** towards fuse link **NH-00\***

FRBmM	NH-00 gL/gG											
$I_n$ [A]	16	20	25	32	35	40	50	63	80	100	125	160
2	<0.5 <sup>1)</sup>	0.6	2.6	10.0 <sup>2)</sup>	10.0 <sup>2)</sup>	10.0 <sup>2)</sup>	10.0 <sup>2)</sup>	10.0 <sup>2)</sup>	10.0 <sup>2)</sup>	10.0 <sup>2)</sup>	10.0 <sup>2)</sup>	10.0 <sup>2)</sup>
4	<0.5 <sup>1)</sup>	<0.5 <sup>1)</sup>	0.9	1.8	3.2	4.8	8.7	10.0 <sup>2)</sup>	10.0 <sup>2)</sup>	10.0 <sup>2)</sup>	10.0 <sup>2)</sup>	10.0 <sup>2)</sup>
6	<0.5 <sup>1)</sup>	<0.5 <sup>1)</sup>	0.7	1.3	2.2	3.3	5.9	8.0	10.0 <sup>2)</sup>	10.0 <sup>2)</sup>	10.0 <sup>2)</sup>	10.0 <sup>2)</sup>
10				0.5	0.8	1.2	1.7	2.7	3.4	5.5	10.0 <sup>2)</sup>	10.0 <sup>2)</sup>
13						1.1	1.5	2.3	2.9	4.7	10.0 <sup>2)</sup>	10.0 <sup>2)</sup>
16							1.0	1.3	1.8	2.3	3.7	8.7
20								0.9	1.1	1.7	2.2	3.4
25									1.6	2.1	3.2	7.2
32										1.7	2.6	5.3
40											2.4	4.5

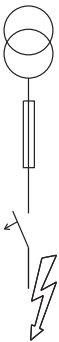
Short circuit selectivity **characteristic D** towards fuse link **NH-00\***

FRBmM	NH-00 gL/gG											
$I_n$ [A]	16	20	25	32	35	40	50	63	80	100	125	160
2	<0.5 <sup>1)</sup>	0.6	1.3	2.5	4.7	7.7	10.0 <sup>2)</sup>	10.0 <sup>2)</sup>	10.0 <sup>2)</sup>	10.0 <sup>2)</sup>	10.0 <sup>2)</sup>	10.0 <sup>2)</sup>
4	<0.5 <sup>1)</sup>	0.5	0.9	1.6	2.8	4.3	9.2	10.0 <sup>2)</sup>	10.0 <sup>2)</sup>	10.0 <sup>2)</sup>	10.0 <sup>2)</sup>	10.0 <sup>2)</sup>
6		<0.5 <sup>1)</sup>	0.7	1.2	1.8	2.6	4.9	7.0	10.0 <sup>2)</sup>	10.0 <sup>2)</sup>	10.0 <sup>2)</sup>	10.0 <sup>2)</sup>
10			0.5	0.8	1.2	1.7	2.7	3.5	5.6	10.0 <sup>2)</sup>	10.0 <sup>2)</sup>	10.0 <sup>2)</sup>
13					1.1	1.5	2.3	2.9	4.5	10.0 <sup>2)</sup>	10.0 <sup>2)</sup>	10.0 <sup>2)</sup>
16						1.4	2.0	2.6	3.9	8.0	10.0 <sup>2)</sup>	10.0 <sup>2)</sup>
20							1.9	2.4	3.6	7.0	10.0 <sup>2)</sup>	10.0 <sup>2)</sup>

1) Selectivity limit current  $I_s$  under 0.5 kA

2) Selectivity limit current  $I_s$  = rated breaking capacity  $I_{cn}$  of the RCD/MCB device

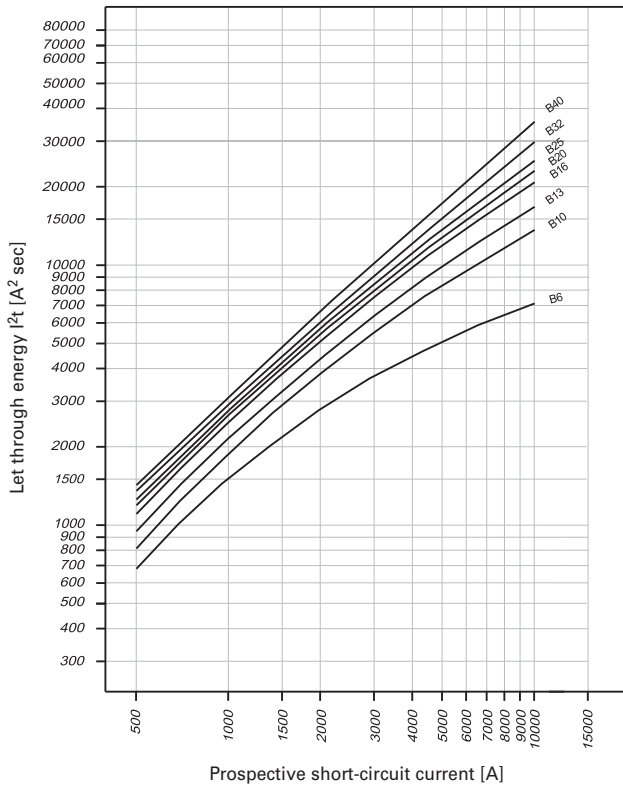
Darker areas: no selectivity



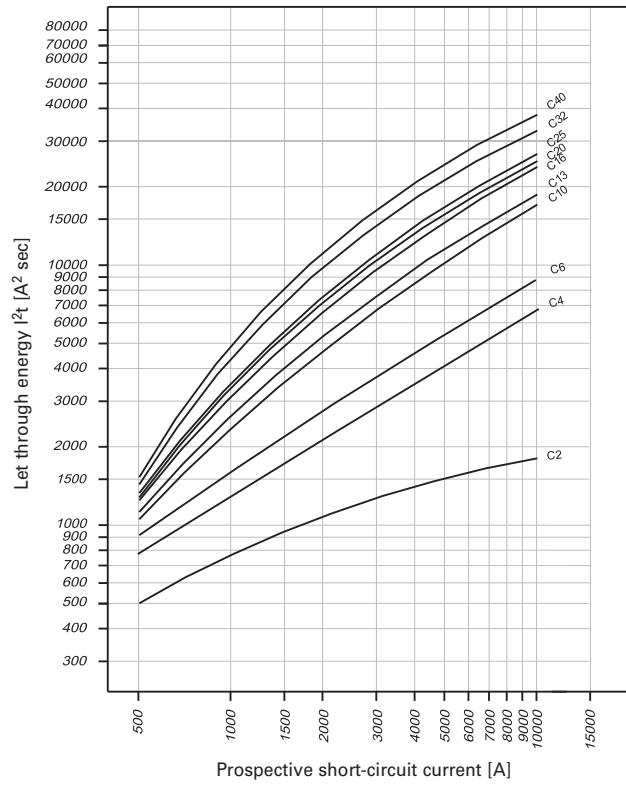


## Let-through Energy FRBmM-../1N/

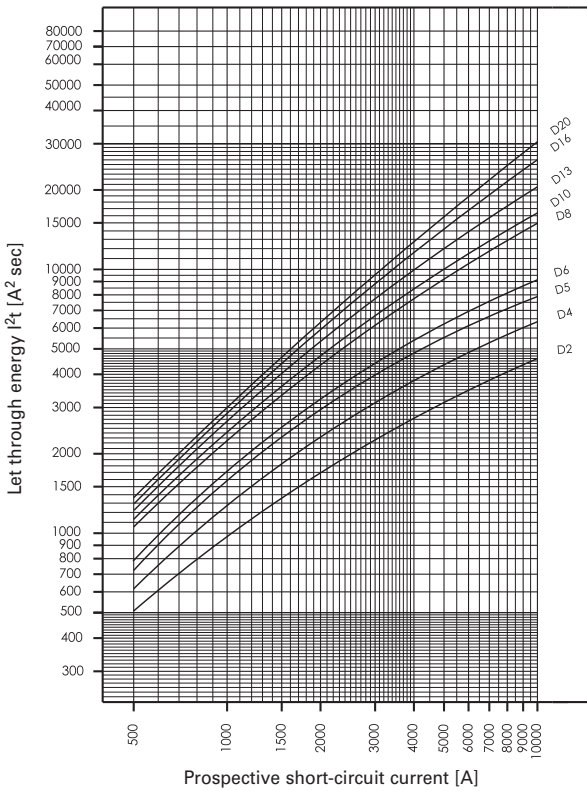
Let-through energy FRBmM, characteristic B, 1+N-pole



Let-through energy FRBmM, characteristic C, 1+N-pole



Let-through energy FRBmM, characteristic D, 1+N-pole



## Combined RCD/MCB Devices FRBmM, FRBm6, 2-pole

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- High-quality residual current device / miniature circuit breaker combination, line voltage-independent
- Contact position indicator red - green
- Fault current tripping indicator white - blue
- Guide for secure terminal connection
- 3-position DIN rail clip, permits removal from existing busbar system
- Comprehensive range of accessories suitable for subsequent installation
- Wide variety of rated tripping currents
- Rated currents up to 40 A
- Tripping characteristics B, C
- Rated breaking capacity 10 kA and 6 kA

## Combined RCD/MCB Devices FRBmM type AC

10 kA, 2-pole

Conditionally surge current-proof 250 A, type AC 

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$I_n/I_{\Delta n}$   
(A)

Type  
Designation

Article No.

Units  
per  
package

### Characteristic B

10/0.03	FRBmM-B10/2/003	170872	1/60
13/0.03	FRBmM-B13/2/003	170873	1/60
16/0.03	FRBmM-B16/2/003	170874	1/60
20/0.03	FRBmM-B20/2/003	170875	1/60
25/0.03	FRBmM-B25/2/003	170876	1/60
10/0.3	FRBmM-B10/2/03	170837	1/60
13/0.3	FRBmM-B13/2/03	170838	1/60
16/0.3	FRBmM-B16/2/03	170839	1/60
20/0.3	FRBmM-B20/2/03	170840	1/60
25/0.3	FRBmM-B25/2/03	170841	1/60

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### Characteristic C

6/0.03	FRBmM-C6/2/003	170721	1/60
10/0.03	FRBmM-C10/2/003	170722	1/60
13/0.03	FRBmM-C13/2/003	170723	1/60
16/0.03	FRBmM-C16/2/003	170724	1/60
20/0.03	FRBmM-C20/2/003	170725	1/60
25/0.03	FRBmM-C25/2/003	170726	1/60
6/0.3	FRBmM-C6/2/03	170853	1/60
10/0.3	FRBmM-C10/2/03	170854	1/60
13/0.3	FRBmM-C13/2/03	170855	1/60
16/0.3	FRBmM-C16/2/03	170856	1/60
20/0.3	FRBmM-C20/2/03	170857	1/60
25/0.3	FRBmM-C25/2/03	170858	1/60

## Combined RCD/MCB Devices FRBmM type A

10 kA, 2-pole

Conditionally surge current-proof 250 A, sensitive to residual pulsating DC, type A



$I_n/I_{\Delta n}$ (A)	Type Designation	Article No.	Units per package
<b>Characteristic B</b>			
10/0.03	FRBmM-B10/2/003-A	170879	1/60
13/0.03	FRBmM-B13/2/003-A	170880	1/60
16/0.03	FRBmM-B16/2/003-A	170881	1/60
20/0.03	FRBmM-B20/2/003-A	170882	1/60
25/0.03	FRBmM-B25/2/003-A	170883	1/60
10/0.1	FRBmM-B10/2/01-A	170803	1/60
13/0.1	FRBmM-B13/2/01-A	170804	1/60
16/0.1	FRBmM-B16/2/01-A	170805	1/60
20/0.1	FRBmM-B20/2/01-A	170806	1/60
25/0.1	FRBmM-B50/2/01-A	170807	1/60
10/0.3	FRBmM-B10/2/03-A	170844	1/60
13/0.3	FRBmM-B13/2/03-A	170845	1/60
16/0.3	FRBmM-B16/2/03-A	170846	1/60
20/0.3	FRBmM-B20/2/03-A	170847	1/60
20/0.3	FRBmM-B25/2/03-A	170848	1/60

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$I_n/I_{\Delta n}$ (A)	Type Designation	Article No.	Units per package
<b>Characteristic C</b>			
6/0.03	FRBmM-C6/2/003-A	170785	1/60
10/0.03	FRBmM-C10/2/003-A	170786	1/60
13/0.03	FRBmM-C13/2/003-A	170787	1/60
16/0.03	FRBmM-C16/2/003-A	170788	1/60
20/0.03	FRBmM-C20/2/003-A	170789	1/60
25/0.03	FRBmM-C25/2/003-A	170790	1/60
6/0.1	FRBmM-C6/2/01-A	170819	1/60
10/0.1	FRBmM-C10/2/01-A	170820	1/60
13/0.1	FRBmM-C13/2/01-A	170821	1/60
16/0.1	FRBmM-C16/2/01-A	170822	1/60
20/0.1	FRBmM-C20/2/01-A	170823	1/60
25/0.1	FRBmM-C25/2/01-A	170824	1/60
6/0.3	FRBmM-C6/2/03-A	170863	1/60
10/0.3	FRBmM-C10/2/03-A	170864	1/60
13/0.3	FRBmM-C13/2/03-A	170865	1/60
16/0.3	FRBmM-C16/2/03-A	170866	1/60
20/0.3	FRBmM-C20/2/03-A	170867	1/60
25/0.3	FRBmM-C25/2/03-A	170730	1/60

## Combined RCD/MCB Devices FRBmM type Super A

10 kA, 2-pole

Conditionally surge current-proof 250 A, sensitive to residual pulsating DC, short time delayed, type Super A 

	$I_n/I_{\Delta n}$ (A)	Type Designation	Article No.	Units per package
<b>Characteristic B</b>				
	10/0.03	FRBmM-B10/2/003-LiA	170886	1/60
	13/0.03	FRBmM-B13/2/003-LiA	170887	1/60
	16/0.03	FRBmM-B16/2/003-LiA	170888	1/60
	20/0.03	FRBmM-B20/2/003-LiA	170889	1/60
	25/0.03	FRBmM-B25/2/003-LiA	170890	1/60
	10/0.1	FRBmM-B10/2/01-LiA	170810	1/60
	13/0.1	FRBmM-B13/2/01-LiA	170811	1/60
	16/0.1	FRBmM-B16/2/01-LiA	170812	1/60
	20/0.1	FRBmM-B20/2/01-LiA	170813	1/60
	25/0.1	FRBmM-B25/2/01-LiA	170814	1/60

	$I_n/I_{\Delta n}$ (A)	Type Designation	Article No.	Units per package
<b>Characteristic C</b>				
	6/0.03	FRBmM-C6/2/003-LiA	170795	1/60
	10/0.03	FRBmM-C10/2/003-LiA	170796	1/60
	13/0.03	FRBmM-C13/2/003-LiA	170797	1/60
	16/0.03	FRBmM-C16/2/003-LiA	170798	1/60
	20/0.03	FRBmM-C20/2/003-LiA	170799	1/60
	25/0.03	FRBmM-C25/2/003-LiA	170800	1/60
	6/0.1	FRBmM-C6/2/01-LiA	170829	1/60
	10/0.1	FRBmM-C10/2/01-LiA	170830	1/60
	13/0.1	FRBmM-C13/2/01-LiA	170831	1/60
	16/0.1	FRBmM-C16/2/01-LiA	170832	1/60
	20/0.1	FRBmM-C20/2/01-LiA	170833	1/60
25/0.1	FRBmM-C25/2/01-LiA	170834	1/60	

## Combined RCD/MCB Devices FRBm6 type AC

6 kA, 2-pole

Conditionally surge current-proof 250 A, type AC 

	$I_n/I_{\Delta n}$ (A)	Type Designation	Article No.	Units per package
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### Characteristic B

32/0.03		FRBm6-B32/2/003	170877	1/60
40/0.03		FRBm6-B40/2/003	170878	1/60
32/0.3		FRBm6-B32/2/03	170842	1/60
40/0.3		FRBm6-B40/2/03	170843	1/60

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### Characteristic C


32/0.03		FRBm6-C32/2/003	170727	1/60
40/0.03		FRBm6-C40/2/003	170728	1/60
32/0.3		FRBm6-C32/2/03	170859	1/60
40/0.3		FRBm6-C40/2/03	170860	1/60

## Combined RCD/MCB Devices FRBm6 type A

6 kA, 2-pole

Conditionally surge current-proof 250 A, sensitive to residual pulsating DC, type A 

	$I_n/I_{\Delta n}$ (A)	Type Designation	Article No.	Units per package
<b>Characteristic B</b>				
	32/0.03	FRBm6-B32/2/003-A	170884	1/60
	40/0.03	FRBm6-B40/2/003-A	170885	1/60
	32/0.1	FRBm6-B32/2/01-A	170808	1/60
	40/0.1	FRBm6-B40/2/01-A	170809	1/60
	32/0.3	FRBm6-B32/2/03-A	170849	1/60
	40/0.3	FRBm6-B40/2/03-A	170850	1/60

	$I_n/I_{\Delta n}$ (A)	Type Designation	Article No.	Units per package
<b>Characteristic C</b>				
	32/0.03	FRBm6-C32/2/003-A	170791	1/60
	40/0.03	FRBm6-C40/2/003-A	170792	1/60
	32/0.1	FRBm6-C32/2/01-A	170825	1/60
	40/0.1	FRBm6-C40/2/01-A	170826	1/60
	32/0.3	FRBm6-C32/2/03-A	170731	1/60
	40/0.3	FRBm6-C40/2/03-A	170732	1/60

## Combined RCD/MCB Devices FRBm6 type Super A

6 kA, 2-pole

Conditionally surge current-proof 250 A, sensitive to residual pulsating DC, short time delayed, type Super A 

	$I_n/I_{\Delta n}$ (A)	Type Designation	Article No.	Units per package
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### Characteristic B

32/0.03		FRBm6-B32/2/003-LiA	170891	1/60
40/0.03		FRBm6-B40/2/003-LiA	170718	1/60
32/0.1		FRBm6-B32/2/01-LiA	170815	1/60
40/0.1		FRBm6-B40/2/01-LiA	170816	1/60

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### Characteristic C

32/0.03		FRBm6-C32/2/003-LiA	170801	1/60
40/0.03		FRBm6-C40/2/003-LiA	170802	1/60
32/0.1		FRBm6-C32/2/01-LiA	170835	1/60
40/0.1		FRBm6-C40/2/01-LiA	170836	1/60



## Specifications | Combined RCD/MCB Devices FRBmM, FRBm6, 2-pole

### Description

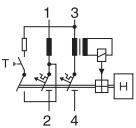
- Combined RCD/MCB device
- Line voltage-independent tripping
- Compatible with standard busbar
- Twin-purpose terminal (lift/open-mouthed) above and below
- Busbar positioning optionally above or below
- Free terminal space despite installed busbar
- Guide for secure terminal connection
- Switching toggle (MCB component) in colour designating the rated current
- Contact position indicator red - green
- Fault current tripping indicator white - blue
- Comprehensive range of accessories suitable for subsequent installation
- The test key "T" must be pressed every half year. The system operator must be informed of this obligation and his responsibility in a way that can be proven. The yearly test interval is only valid for residential and similar applications. Under all other conditions (e.g. damply or dusty environment), it's recommended to test in shorter intervals (e.g. monthly).
- Pressing the test key "T" serves the only purpose of function testing the residual current device (RCD). This test does not make earthing resistance measurement ( $R_E$ ), or proper checking of the earth conductor condition redundant, which must be performed separately.
- **Type -A:** Protects against special forms of residual pulsating DC which have have not been smoothed.
- **Type -Super A:** High reliability against unwanted tripping. Compulsory for any circuit where personal injury or damage to property may occur in case of unwanted tripping.

### Accessories:

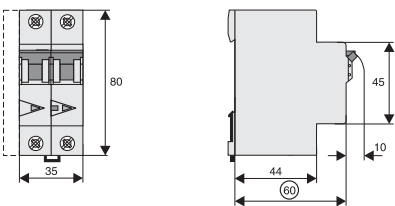
Auxiliary switch for subsequent installation	ZP-IHK	286052
	ZP-WHK	286053
	ZP-NHK	248437
Shunt trip release	ZP-ASA..	248438, 248439
Switching interlock	IS/SPE-1TE	101911
Screws lock 2MU		221954800

### Connection diagram

2-pole



### Dimensions (mm)



## Technical Data

		<b>FRBmM, FRBm6, 2-pole</b>
<b>Electrical</b>		
Design according to		IEC/EN 61009
Current test marks as printed onto the device		
Tripping line voltage-independent		instantaneous 250A (8/20 $\mu$ s), surge current-proof
Type Super A		10 ms delay, surge current-proof
Rated voltage	$U_n$	240V AC, 50Hz
Rated tripping current	$I_{\Delta n}$	30, 100, 300 mA
Rated non-tripping current	$I_{\Delta no}$	0.5 $I_{\Delta n}$
Sensitivity		AC and pulsating DC
Selectivity class		3
Rated breaking capacity	$I_{cn}$	
FRBmM		10 kA
FRBm6		6 kA
Rated current		6 - 40 A
Rated impulse withstand voltage	$U_{imp}$	4 kV (1.2/50 $\mu$ s)
Characteristic		B, C
Maximum back-up fuse (short circuit)		100 A gL (>10 kA)
<b>Endurance</b>		
electrical components		$\geq$ 4,000 operating cycles
mechanical components		$\geq$ 10,000 operating cycles
<b>Mechanical</b>		
Frame size		45 mm
Device height		80 mm
Device width		35 mm (2MU)
Mounting		3-position DIN rail clip, permits removal from existing busbar system
Degree of protection switch		IP20
Degree of protection, built-in		IP40
Upper and lower terminals		open mouthed/lift terminals
Terminal protection		finger and hand touch safe, VBG4, ÖVE-EN 6
Terminal capacity		1 - 25 mm <sup>2</sup>
Terminal torque		2 - 2.4 Nm
Busbar thickness		0.8 - 2 mm
Tripping temperature		-25°C to +40°C
Storage- and transport temperature		-35°C to +60°C
Climatic conditions		acc. to IEC 68-2 (25..55°C / 90..95% RH)

## FRBmM: Influence of ambient temperature on load carrying capacity

- Values = max. allowed current in Ampere at the specific temperature
- Temperature factor (%/K) = 0,5

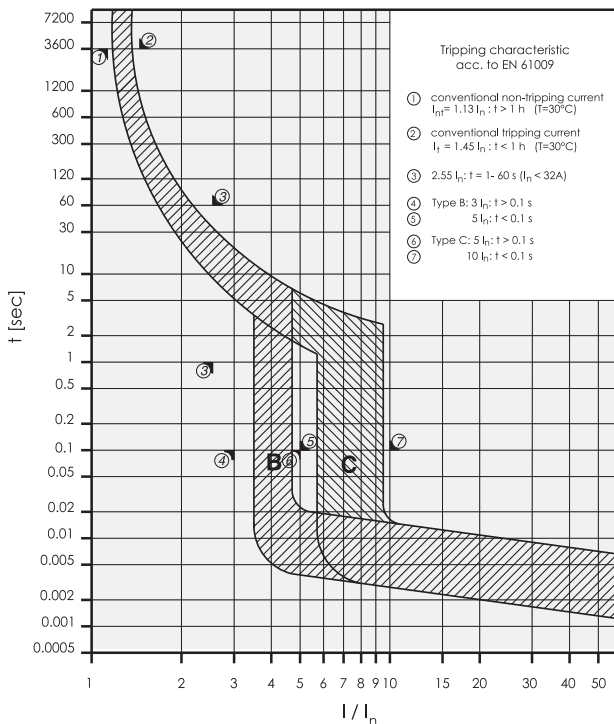
	Ambient temperature / °C									
	-40	-30	-25	-20	-10	0	10	20	30	40
6	8,1	7,8	7,7	7,5	7,2	6,9	6,6	6,3	6,0	5,7
10	13,5	13,0	12,8	12,5	12,0	11,5	11,0	10,5	10,0	9,5
13	17,6	16,9	16,6	16,3	15,6	15,0	14,3	13,7	13,0	12,4
16	21,6	20,8	20,4	20,0	19,2	18,4	17,6	16,8	16,0	15,2
20	27,0	26,0	25,5	25,0	24,0	23,0	22,0	21,0	20,0	19,0

## FRBm6: Influence of ambient temperature on load carrying capacity

- Values = max. allowed current in Ampere at the specific temperature
- Temperature factor (%/K) = 0,5

	Ambient temperature / °C									
	-40	-30	-25	-20	-10	0	10	20	30	40
25	33,8	32,5	31,9	31,3	30,0	28,8	27,5	26,3	25,0	23,8
32	43,2	41,6	40,8	40,0	38,4	36,8	35,2	33,6	32,0	30,4
40	54,0	52,0	51,0	50,0	48,0	46,0	44,0	42,0	40,0	38,0

## Tripping Characteristic FRBm., Characteristics B and C



## Short Circuit Selectivity FRBmM towards Neozed<sup>1)</sup> / Diazed<sup>2)</sup> / NH00<sup>3)</sup>

Short circuit currents in kA, Rated currents of fuses in A

Short circuit selectivity **FRBmM** towards fuse link **Neozed**<sup>1)</sup>

FRBm	Neozed <sup>1)</sup>									
	16	20	25	32	35	40	50	63	80	100
<b>B10</b>	<0,5	0,5	0,9	2	2,3	3,7	8	10	10	10
<b>B13</b>	<0,5	0,5	0,8	1,7	1,9	3	6	10	10	10
<b>B16</b>		0,5	0,7	1,5	1,7	2,4	4,4	6,8	10	10
<b>B20</b>			0,7	1,4	1,5	2,2	3,9	6	9,2	10
<b>C10</b>	<0,5	0,5	0,8	1,7	1,9	3	6,1	10	10	10
<b>C13</b>	<0,5	0,5	0,7	1,6	1,8	2,8	5,5	9,5	10	10
<b>C16</b>		<0,5	0,7	1,3	1,5	2,2	4	6,2	10	10
<b>C20</b>			0,6	1,3	1,4	2,1	3,7	5,6	8,5	10

Short circuit selectivity **FRBmM** towards fuse link **Diazed**<sup>2)</sup>

FRBm	Diazed <sup>2)</sup>									
	16	20	25	32	35	50	63	80	100	
<b>B10</b>	<0,5	0,5	0,9	1,8	2,9	5,6	10	10	10	
<b>B13</b>	<0,5	0,5	0,8	1,5	2,4	4,5	10	10	10	
<b>B16</b>		0,5	0,8	1,3	2	3,4	8	10	10	
<b>B20</b>			0,7	1,3	1,9	3,1	7,1	10	10	
<b>C10</b>	<0,5	0,5	0,8	1,5	2,4	4,4	10	10	10	
<b>C13</b>	<0,5	0,5	0,8	1,4	2,3	4,2	10	10	10	
<b>C16</b>		<0,5	0,7	1,2	1,9	3,2	7,6	10	10	
<b>C20</b>			0,7	1,2	1,8	2,9	6,5	9,7	10	

Short circuit selectivity **FRBmM** towards fuse link **NH00**<sup>3)</sup>

FRBm	NH00 <sup>3)</sup>											
	16	20	25	32	35	40	50	63	80	100	125	160
<b>B10</b>	<0,5	<0,5	0,8	1,5	2,3	3,2	5,7	9,1	10	10	10	10
<b>B13</b>	<0,5	<0,5	0,8	1,3	1,9	2,7	4,4	6,5	10	10	10	10
<b>B16</b>		<0,5	0,7	1,1	1,6	2,2	3,4	4,8	8	10	10	10
<b>B20</b>			0,6	1	1,4	2	3,1	4,3	7	10	10	10
<b>C10</b>	<0,5	<0,5	0,7	1,3	1,9	2,7	4,5	6,9	10	10	10	10
<b>C13</b>	<0,5	<0,5	0,7	1,2	1,8	2,5	4,1	6,1	10	10	10	10
<b>C16</b>		<0,5	0,6	1	1,5	2	3,1	4,4	7,5	10	10	10
<b>C20</b>			0,6	0,9	1,4	1,9	2,9	4,1	6,5	10	10	10

no selectivity

<sup>1)</sup> SIEMENS Type 5SE2; Size: D01, D02, D03; Operating class gG; Rated voltage: AC 400 V/DC 250 V

<sup>2)</sup> SIEMENS Type 5SB2, 5SB4, 5SC2; Size: DII, DIII, DIV; Operating class gG; Rated voltage: AC 500 V/DC 500 V

<sup>3)</sup> SIEMENS Type 3NA3 8, 3NA6 8, 3NA7 8; Size: 000, 00; Operating class gG; Rated voltage: AC 500 V/DC 250 V

## Short Circuit Selectivity FRBm6 towards Neozed<sup>1)</sup> / Diazed<sup>2)</sup> / NH00<sup>3)</sup>

Short circuit currents in kA, Rated currents of fuses in A

Short circuit selectivity **FRBm6** towards fuse link **Neozed**<sup>1)</sup>

FRBm6	Neozed <sup>1)</sup>									
	16	20	25	32	35	40	50	63	80	100
<b>B25</b>				1,2	1,3	1,8	3,1	4,7	6	6
<b>B32</b>				1,2	1,7	2,7	3,8	5,5	6	
<b>B40</b>					1,3	1,7	2,2	2,7	4,2	
<b>C25</b>			1,1	1,3	1,8	2,8	3,9	5,6	6	
<b>C32</b>				1,2	1,7	2,6	3,6	5,1	6	
<b>C40</b>					1,3	1,9	3,3	3,2	5,8	

Short circuit selectivity **FRBm6** towards fuse link **Diazed**<sup>1)</sup>

FRBm6	Diazed <sup>2)</sup>									
	16	20	25	32	35	50	63	80	100	
<b>B25</b>				1,1	1,5	2,4	5,5	6	6	
<b>B32</b>					1,4	2,1	4,3	6	6	
<b>B40</b>						1,4	2,4	2,9	5,1	
<b>C25</b>			1,1	1,5	2,3	4,4	6	6		
<b>C32</b>				1,4	2,2	4,1	5,6	6		
<b>C40</b>						1,6	2,8	3,6	6	

Short circuit selectivity **FRBm6** towards fuse link **NH00**<sup>3)</sup>

FRBm6	NH00 <sup>3)</sup>												
	16	20	25	32	35	40	50	63	80	100	125	160	
<b>B25</b>				0,9	1,2	1,6	2,4	3,4	5,5	6	6	6	
<b>B32</b>				1,1	1,4	2,1	2,9	4,3	6	6	6		
<b>B40</b>						1,4	1,9	2,8	4,1	6	6		
<b>C25</b>			0,9	1,2	1,6	2,3	3	4,6	6	6	6		
<b>C32</b>				1,1	1,5	2,1	2,8	4,3	6	6	6		
<b>C40</b>						1,5	2,1	3,1	5,4	6	6		

no selectivity

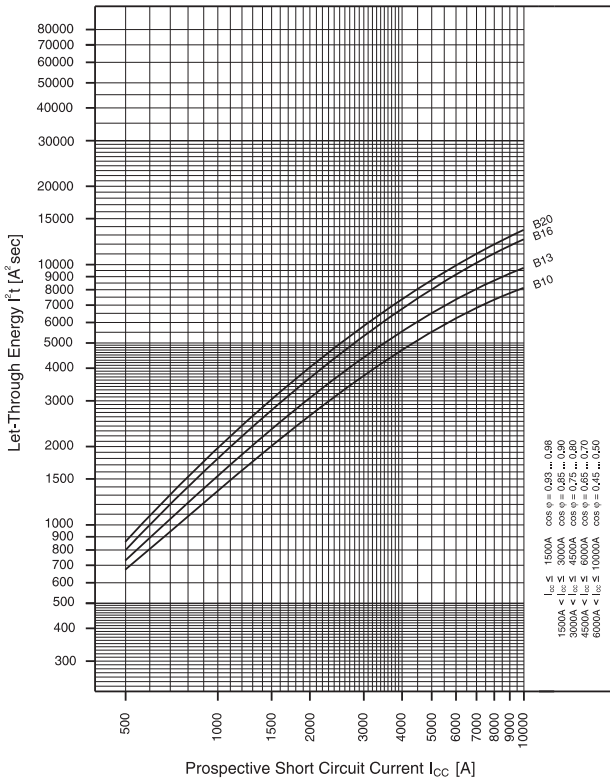
<sup>1)</sup> SIEMENS Type 5SE2; Size: D01, D02, D03; Operating class gG; Rated voltage: AC 400 V/DC 250 V

<sup>2)</sup> SIEMENS Type 5SB2, 5SB4, 5SC2; Size: DII, DIII, DIV; Operating class gG; Rated voltage: AC 500 V/DC 500 V

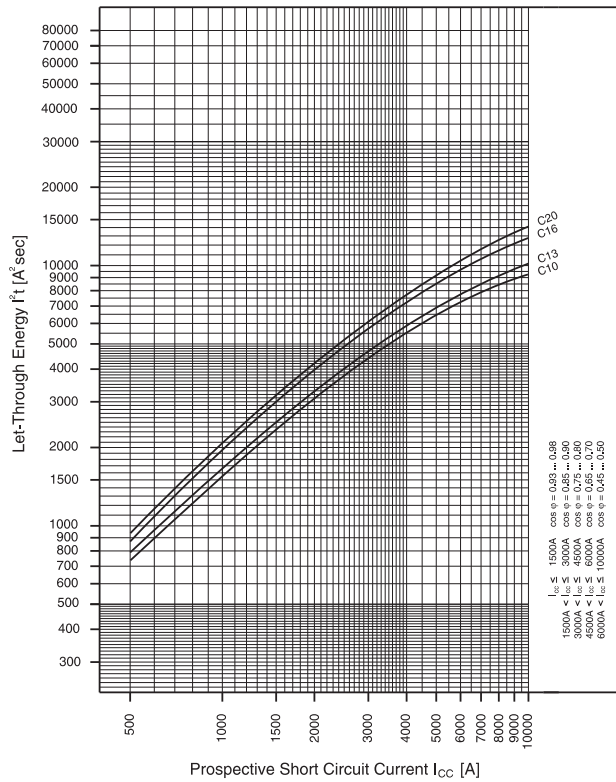
<sup>3)</sup> SIEMENS Type 3NA3 8, 3NA6 8, 3NA7 8; Size: 000, 00; Operating class gG; Rated voltage: AC 500 V/DC 250 V

## Let-through Energy FRBm.../2/

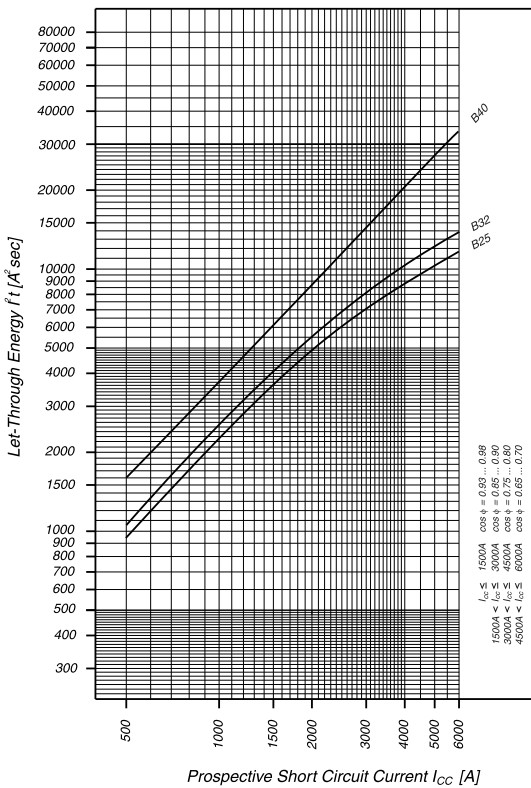
Let-through energy FRBmM, characteristic B, 2-pole



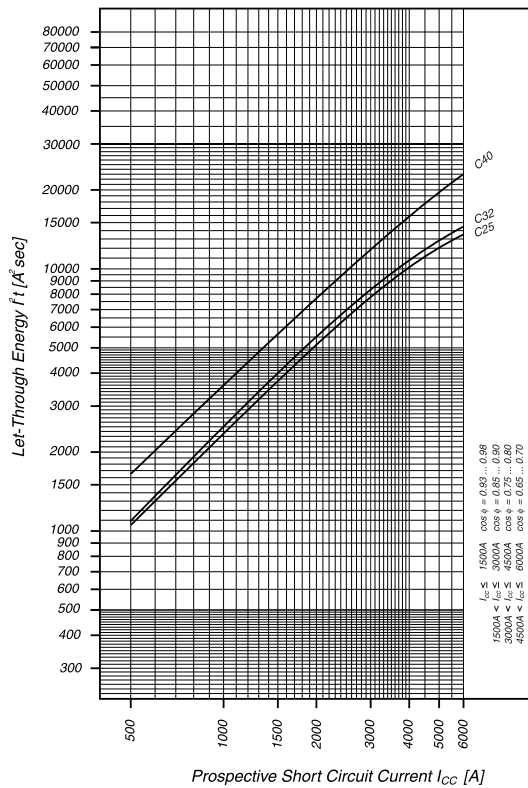
Let-through energy FRBmM, characteristic C, 2-pole



Let-through energy FRBm6, characteristic B, 2-pole



Let-through energy FRBm6, characteristic C, 2-pole



## Combined RCD/MCB Devices FRBmM, 3-pole

SG49512






- High-quality residual current device / miniature circuit breaker combination, line voltage-independent
- Contact position indicator red - green
- Fault current tripping indicator white - blue
- Guide for secure terminal connection
- 3-position DIN rail clip, permits removal from existing busbar system
- Comprehensive range of accessories suitable for subsequent installation
- Wide variety of rated tripping currents
- Rated currents up to 32 A
- Tripping characteristics B, C, D
- Rated breaking capacity 10 kA

## Combined RCD/MCB Devices FRBmM type A

10 kA, 3-pole

Conditionally surge current-proof 250 A, sensitive to residual pulsating DC, type A



	$I_n/I_{\Delta n}$ (A)	Type Designation	Article No.	Units per package	
<b>Characteristic B</b>					
	10/0.03	FRBmM-B10/3/003-A	170733	1/30	
	13/0.03	FRBmM-B13/3/003-A	170734	1/30	
	16/0.03	FRBmM-B16/3/003-A	170735	1/30	
	20/0.03	FRBmM-B20/3/003-A	170736	1/30	
	10/0.1	FRBmM-B10/3/01-A	170780	1/30	
	13/0.1	FRBmM-B13/3/01-A	170781	1/30	
	16/0.1	FRBmM-B16/3/01-A	170782	1/30	
	20/0.1	FRBmM-B20/3/01-A	170783	1/30	
	<b>Characteristic C</b>				
		6/0.03	FRBmM-C6/3/003-A	170737	1/30
10/0.03		FRBmM-C10/3/003-A	170738	1/30	
13/0.03		FRBmM-C13/3/003-A	170739	1/30	
16/0.03		FRBmM-C16/3/003-A	170740	1/30	
20/0.03		FRBmM-C20/3/003-A	170741	1/30	
25/0.03		FRBmM-C25/3/003-A	170772	1/30	
32/0.03		FRBmM-C32/3/003-A	170773	1/30	
6/0.1		FRBmM-C6/3/01-A	170742	1/30	
10/0.1		FRBmM-C10/3/01-A	170743	1/30	
13/0.1		FRBmM-C13/3/01-A	170744	1/30	
16/0.1		FRBmM-C16/3/01-A	170745	1/30	
20/0.1		FRBmM-C20/3/01-A	170746	1/30	
25/0.1		FRBmM-C25/3/01-A	170747	1/30	
32/0.1		FRBmM-C32/3/01-A	170748	1/30	
<b>Characteristic D</b>					
		6/0.03	FRBmM-D6/3/003-A	170774	1/30
	10/0.03	FRBmM-D10/3/003-A	170775	1/30	
	13/0.03	FRBmM-D13/3/003-A	170776	1/30	
	16/0.03	FRBmM-D16/3/003-A	170777	1/30	
	20/0.03	FRBmM-D20/3/003-A	170778	1/30	
	25/0.03	FRBmM-D25/3/003-A	170779	1/30	
	6/0.1	FRBmM-D6/3/01-A	170749	1/30	
	10/0.1	FRBmM-D10/3/01-A	170750	1/30	
	13/0.1	FRBmM-D13/3/01-A	170751	1/30	
	16/0.1	FRBmM-D16/3/01-A	170752	1/30	
20/0.1	FRBmM-D20/3/01-A	170753	1/30		
25/0.1	FRBmM-D25/3/01-A	170754	1/30		



## Specifications | Combined RCD/MCB Devices FRBmM, 3-pole

### Description

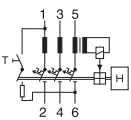
- Combined RCD/MCB device
- Line voltage-independent tripping
- Compatible with standard busbar
- Twin-purpose terminal (lift/open-mouthed) above and below
- Busbar positioning optionally above or below
- Free terminal space despite installed busbar
- Guide for secure terminal connection
- Switching toggle (MCB component) in colour designating the rated current
- Contact position indicator red - green
- Fault current tripping indicator white - blue
- Comprehensive range of accessories suitable for subsequent installation
- The test key "T" must be pressed every half year. The system operator must be informed of this obligation and his responsibility in a way that can be proven. The yearly test interval is only valid for residential and similar applications. Under all other conditions (e.g. damply or dusty environment), it's recommended to test in shorter intervals (e.g. monthly).
- Pressing the test key "T" serves the only purpose of function testing the residual current device (RCD). This test does not make earthing resistance measurement ( $R_E$ ), or proper checking of the earth conductor condition redundant, which must be performed separately.
- **Type -A:** Protects against special forms of residual pulsating DC which have not been smoothed.
- **Type -G:** High reliability against unwanted tripping. Compulsory for any circuit where personal injury or damage to property may occur in case of unwanted tripping (ÖVE/ÖNORM E 8001-1 § 12.1.6).

### Accessories:

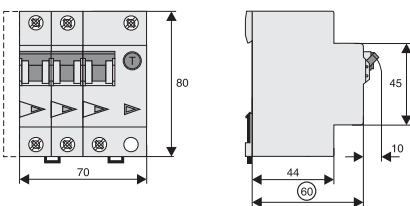
Auxiliary switch for subsequent installation	ZP-IHK	286052
	ZP-WHK	286053
Tripping signal contact for subsequent installation	ZP-NHK	248437
Shunt trip release	ZP-ASA/..	248438, 248439
Undervoltage release	Z-USA	258288, 248289, 248290
	Z-USD	248292, 248291
Switching interlock	IS/SPE-1TE	101911
Screws lock 4MU		221953900

### Connection diagram

3-pole



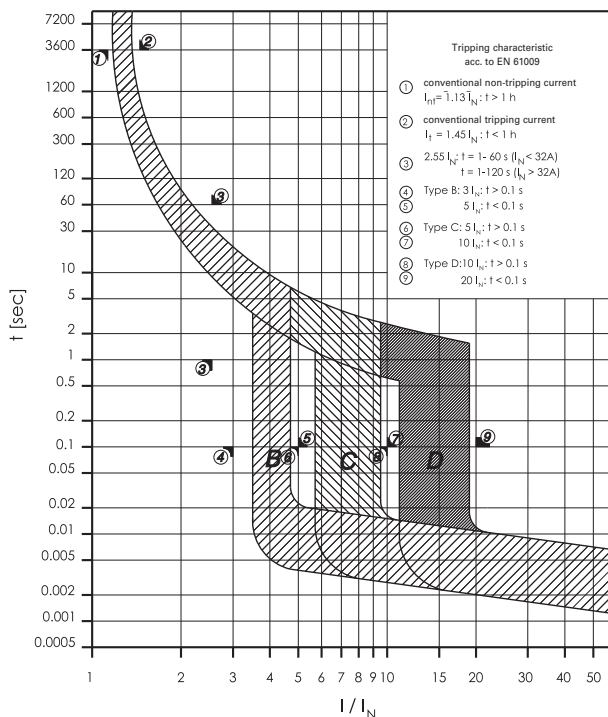
### Dimensions (mm)



## Technical Data

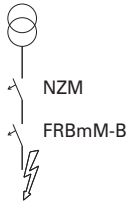
		<b>FRBmM, 3-pole</b>
<b>Electrical</b>		
Design according to		IEC/EN 61009
Current test marks as printed onto the device		
Tripping line voltage-independent		instantaneous 250A (8/20 $\mu$ s), surge current-proof
Type G		10 ms delay, surge current-proof
Rated voltage	$U_n$	240/415V AC, 50Hz
Rated tripping current	$I_{\Delta n}$	30, 100 mA
Rated non-tripping current	$I_{\Delta no}$	0.5 $I_{\Delta n}$
Sensitivity		AC and pulsating DC
Selectivity class		3
Rated breaking capacity	$I_{cn}$	10 kA
Rated current		6 - 32 A
Rated impulse withstand voltage	$U_{imp}$	4 kV (1.2/50 $\mu$ s)
Characteristic		B, C, D
Maximum back-up fuse (short circuit)		100 A gL (>10 kA)
<b>Endurance</b>		
electrical components		$\geq$ 4,000 operating cycles
mechanical components		$\geq$ 10,000 operating cycles
<b>Mechanical</b>		
Frame size		45 mm
Device height		80 mm
Device width		70 mm (4MU)
Mounting		3-position DIN rail clip, permits removal from existing busbar system
Degree of protection switch		IP20
Degree of protection, built-in		IP40
Upper and lower terminals		open mouthed/lift terminals
Terminal protection		finger and hand touch safe, VBG4, ÖVE-EN 6
Terminal capacity		1 - 25 mm <sup>2</sup>
Terminal torque		2 - 2.4 Nm
Busbar thickness		0.8 - 2 mm
Tripping temperature		-25°C to +40°C
Storage- and transport temperature		-35°C to +60°C
Climatic conditions		acc. to IEC 68-2 (25..55°C / 90..95% RH)

### Tripping Characteristic FRBmM, Characteristics B, C and D



## Short-Circuit Selectivity

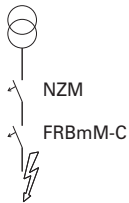
### Between FRBmM, 3-pole, characteristic B and NZM 1/2



Selectivity-limit current  $I_s$  [kA] for selectivity between FRBmM-.../B and NZM (overload and short-circuit release unit NZM at max. value).

$I_n$ [A]	NZM...1-A...						NZM...2-A...								
	$I_{cu} = 25(36)(50)(100)$ kA bei $U_e = 400/415$ V						$I_{cu} = 25(36)(50)(150)$ kA bei $U_e = 400/415$ V								
FRBmM-B	40	50	63	80	100	125	40	50	63	80	100	125	160	200	250
10	1.2	1.5	2	2	4	10	1	1.5	2.5	3	10	10	10	10	10
13	1	1.5	2	2	4	10	1	1.2	2	3	10	10	10	10	10
16	1	1.2	1.5	2	3	8	1	1.2	1.5	2.5	10	10	10	10	10
20	0.8	1.2	1.5	1.5	3	8	1	1.2	1.5	1.5	10	10	10	10	10

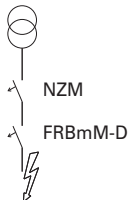
### Between FRBmM, 3-pole, characteristic C and NZM 1/2



Selectivity-limit current  $I_s$  [kA] for selectivity between FRBmM-.../C and NZM (overload and short-circuit release unit NZM at max. value).

$I_n$ [A]	NZM...1-A...						NZM...2-A...								
	$I_{cu} = 25(36)(50)(100)$ kA bei $U_e = 400/415$ V						$I_{cu} = 25(36)(50)(150)$ kA bei $U_e = 400/415$ V								
FRBmM-C	40	50	63	80	100	125	40	50	63	80	100	125	160	200	250
6	1.2	2	2.5	3	5	10	1.2	1.5	2.5	3	10	10	10	10	10
10	1.2	1.5	2	2	4	10	1	1.5	2.5	3	10	10	10	10	10
13	1	1.5	2	2	4	10	1	1.2	2	3	10	10	10	10	10
16	1	1.2	1.5	2	3	8	1	1.2	1.5	2.5	10	10	10	10	10
20	0.8	1.2	1.5	1.5	3	8	1	1.2	1.5	1.5	10	10	10	10	10
25	0.7	1.2	1.5	1.5	3	7	0.8	1	1.5	2	10	10	10	10	10
32	-	1.2	1	1.5	2	6	-	1	1.5	2	6	6	6	6	6

### Between FRBmM, 3-pole, characteristic D and NZM 1/2



Selectivity-limit current  $I_s$  [kA] for selectivity between FRBmM-.../D and NZM (overload and short-circuit release unit NZM at max. value).

$I_n$ [A]	NZM...1-A...						NZM...2-A...								
	$I_{cu} = 25(36)(50)(100)$ kA bei $U_e = 400/415$ V						$I_{cu} = 25(36)(50)(150)$ kA bei $U_e = 400/415$ V								
FRBmM-D	40	50	63	80	100	125	40	50	63	80	100	125	160	200	250
6	1.2	2	2.5	3	5	10	1.2	1.5	2.5	3	10	10	10	10	10
10	1.2	1.5	2	2	4	10	1	1.5	2.5	3	10	10	10	10	10
13	1	1.5	2	2	4	10	1	1.2	2	3	10	10	10	10	10
16	1	1.2	1.5	2	3	8	1	1.2	1.5	2.5	10	10	10	10	10
20	0.8	1.2	1.5	1.5	3	8	1	1.2	1.5	1.5	10	10	10	10	10
25	0.7	1.2	1.5	1.5	3	7	0.8	1	1.5	2	10	10	10	10	10

## Back-up Protection FRBmM 3-pole / NZMB(C)(N)(H)1

### FRBmM 3-pole / NZMB1

$U_e = 133 / 230 \text{ V}$

$I_n$ [A]	FRBmM- $I_n/3/B(C)(D)/003(01)(03) + \text{NZMB1}$		
	Type B	Type C	Type D
6	-	25kA	25kA
10	25kA	25kA	25kA
13	25kA	25kA	25kA
16	25kA	25kA	25kA
20	25kA	25kA	25kA
25	-	25kA	25kA
32	-	25kA	-

### FRBmM 3-pole / NZMC1

$U_e = 133 / 230 \text{ V}$

$I_n$ [A]	FRBmM- $I_n/3/B(C)(D)/003(01)(03) + \text{NZMC1}$		
	Type B	Type C	Type D
6	-	36kA	36kA
10	36kA	36kA	36kA
13	36kA	36kA	36kA
16	36kA	36kA	36kA
20	36kA	36kA	36kA
25	-	36kA	36kA
32	-	36kA	-

### FRBmM 3-pole / NZMN1

$U_e = 133 / 230 \text{ V}$

$I_n$ [A]	FRBmM- $I_n/3/B(C)(D)/003(01)(03) + \text{NZMN1}$		
	Type B	Type C	Type D
6	-	50kA	50kA
10	50kA	50kA	50kA
13	50kA	50kA	50kA
16	50kA	50kA	50kA
20	50kA	50kA	50kA
25	-	50kA	50kA
32	-	50kA	-

### FRBmM 3-pole / NZMH1

$U_e = 133 / 230 \text{ V}$

$I_n$ [A]	FRBmM- $I_n/3/B(C)(D)/003(01)(03) + \text{NZMH1}$		
	Type B	Type C	Type D
6	-	70kA	70kA
10	70kA	70kA	70kA
13	70kA	70kA	70kA
16	70kA	70kA	70kA
20	70kA	70kA	70kA
25	-	70kA	70kA
32	-	70kA	-

## Back-up Protection FRBmM 3-pole / NZMB(C)(N)(H)2

### FRBmM 3-pole / NZMB2

$U_e = 133 / 230 \text{ V}$

$I_n$ [A]	FRBmM- $I_n/3/B(C)(D)/003(01)(03) + \text{NZMB2}$		
	Type B	Type C	Type D
6	-	25kA	25kA
10	25kA	25kA	25kA
13	25kA	25kA	25kA
16	25kA	25kA	25kA
20	25kA	25kA	25kA
25	-	25kA	25kA
32	-	25kA	-

### FRBmM 3-pole / NZMC2

$U_e = 133 / 230 \text{ V}$

$I_n$ [A]	FRBmM- $I_n/3/B(C)(D)/003(01)(03) + \text{NZMC2}$		
	Type B	Type C	Type D
6	-	36kA	36kA
10	36kA	36kA	36kA
13	36kA	36kA	36kA
16	36kA	36kA	36kA
20	36kA	36kA	36kA
25	-	36kA	36kA
32	-	36kA	-

### FRBmM 3-pole / NZMN2

$U_e = 133 / 230 \text{ V}$

$I_n$ [A]	FRBmM- $I_n/3/B(C)(D)/003(01)(03) + \text{NZMN2}$		
	Type B	Type C	Type D
6	-	50kA	50kA
10	50kA	50kA	50kA
13	50kA	50kA	50kA
16	50kA	50kA	50kA
20	50kA	50kA	50kA
25	-	50kA	50kA
32	-	50kA	-

### FRBmM 3-pole / NZMH2

$U_e = 133 / 230 \text{ V}$

$I_n$ [A]	FRBmM- $I_n/3/B(C)(D)/003(01)(03) + \text{NZMH2}$		
	Type B	Type C	Type D
6	-	70kA	70kA
10	70kA	70kA	70kA
13	70kA	70kA	70kA
16	70kA	70kA	70kA
20	70kA	70kA	70kA
25	-	70kA	70kA
32	-	70kA	-

## Back-up Protection FRBmM 3-pole / NH00

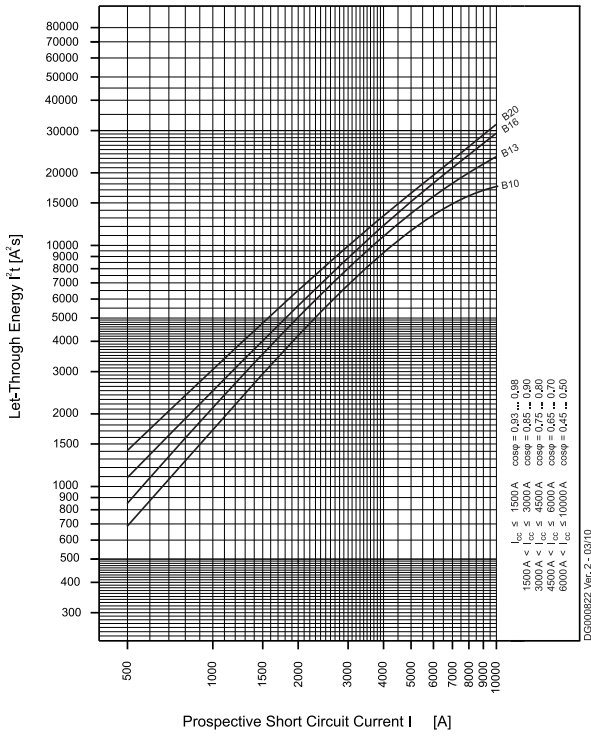
### FRBmM 3-pole / NH00 125A gG/gL

$U_e = 133 / 230 \text{ V}$

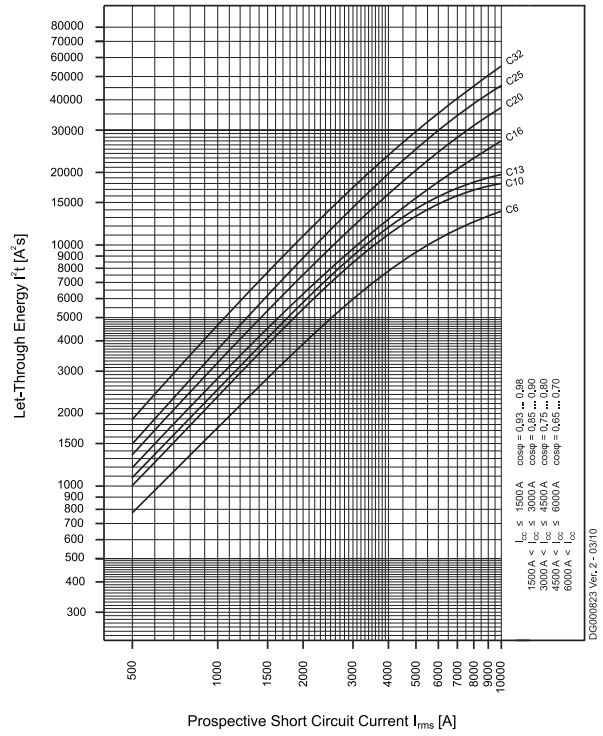
$I_n$ [A]	FRBmM- $I_n$ /3/B(C)(D)/003(01)(03) + NH00 125A gG/gL		
	Type B	Type C	Type D
6	-	70kA	70kA
10	70kA	70kA	70kA
13	70kA	70kA	70kA
16	70kA	70kA	70kA
20	70kA	70kA	70kA
25	-	70kA	70kA
32	-	70kA	-

## Maximum Let-Through Energy FRBmM 3-pole

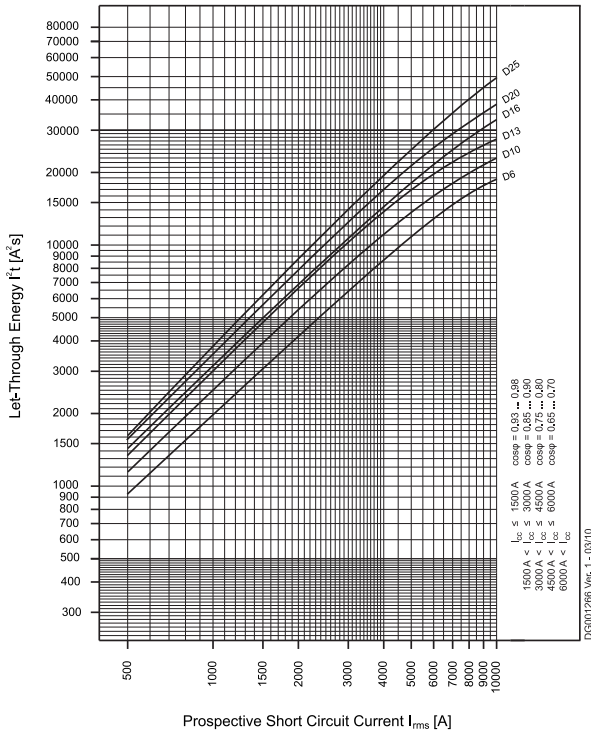
**Type B**



**Type C**

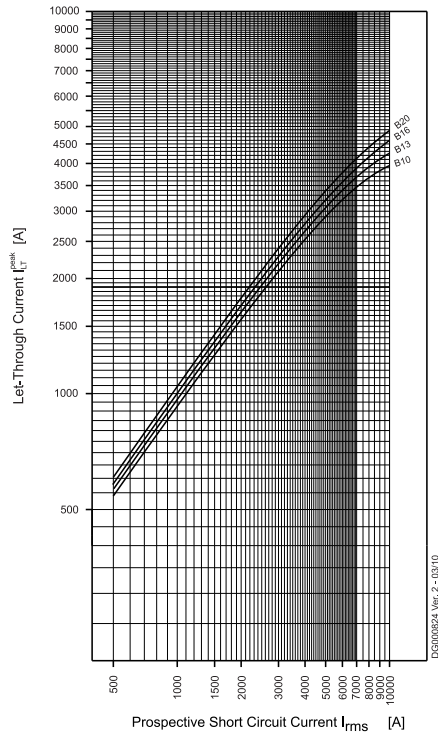


**Type D**

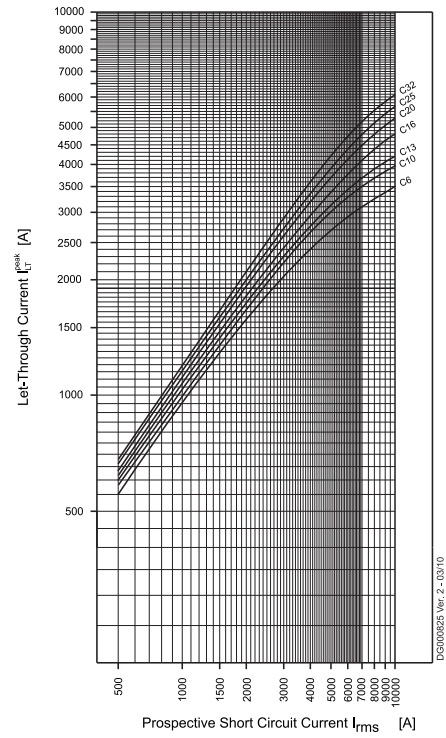


## Maximum Let-Through Current FRBmM 3-pole

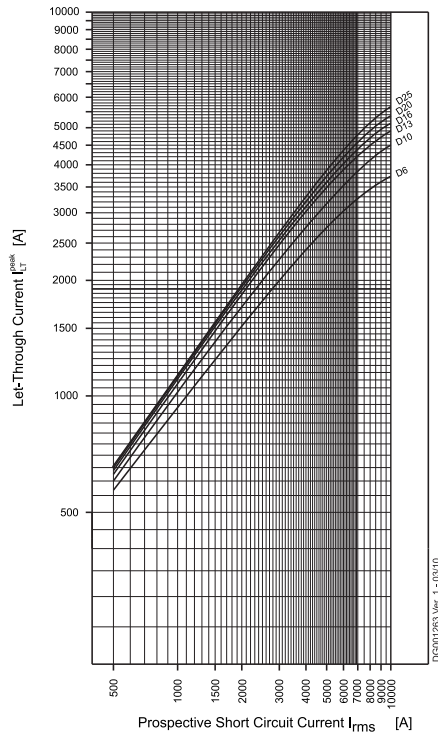
**Type B**



**Type C**



**Type D**



## Combined RCD/MCB Devices FRBm6, FRBm4, 3+N-pole

SG14211



- High-quality residual current device / miniature circuit breaker combination, line voltage-independent
- Contact position indicator red - green
- Fault current tripping indicator white - blue
- Guide for secure terminal connection
- 3-position DIN rail clip, permits removal from existing busbar system
- Comprehensive range of accessories suitable for subsequent installation
- Wide variety of rated tripping currents
- Rated currents up to 32 A
- Tripping characteristics B, C, D
- Rated breaking capacity 6 kA or 4.5 kA






## Combined RCD/MCB Devices FRBm6 type AC

6 kA, 3+N-pole

Conditionally surge current-proof 250 A, type AC






	$I_n/I_{\Delta n}$ (A)	Type Designation	Article No.	Units per package	
<b>Characteristic B</b>					
SG14211 	13/0.03	FRBm6-B13/3N/003	170985	1/30	
	16/0.03	FRBm6-B16/3N/003	170986	1/30	
	13/0.1	FRBm6-B13/3N/01	170896	1/30	
	16/0.1	FRBm6-B16/3N/01	170897	1/30	
	13/0.3	FRBm6-B13/3N/03	170943	1/30	
	16/0.3	FRBm6-B16/3N/03	170944	1/30	
<b>Characteristic C</b>					
SG14211 	6/0.03	FRBm6-C6/3N/003	170989	1/30	
	10/0.03	FRBm6-C10/3N/003	170990	1/30	
	13/0.03	FRBm6-C13/3N/003	170991	1/30	
	16/0.03	FRBm6-C16/3N/003	170992	1/30	
	6/0.1	FRBm6-C6/3N/01	170900	1/30	
	10/0.1	FRBm6-C10/3N/01	170901	1/30	
	13/0.1	FRBm6-C13/3N/01	170902	1/30	
	16/0.1	FRBm6-C16/3N/01	170903	1/30	
	6/0.3	FRBm6-C6/3N/03	170947	1/30	
	10/0.3	FRBm6-C10/3N/03	170948	1/30	
	13/0.3	FRBm6-C13/3N/03	170949	1/30	
	16/0.3	FRBm6-C16/3N/03	170950	1/30	
	<b>Characteristic D</b>				
	SG14211 	6/0.03	FRBm6-D6/3N/003	171003	1/30
10/0.03		FRBm6-D10/3N/003	171004	1/30	
13/0.03		FRBm6-D13/3N/003	171005	1/30	
16/0.03		FRBm6-D16/3N/003	171006	1/30	
6/0.1		FRBm6-D6/3N/01	170933	1/30	
10/0.1		FRBm6-D10/3N/01	170934	1/30	
13/0.1		FRBm6-D13/3N/01	170935	1/30	
16/0.1		FRBm6-D16/3N/01	170936	1/30	
6/0.3		FRBm6-D6/3N/03	170961	1/30	
10/0.3		FRBm6-D10/3N/03	170962	1/30	
13/0.3		FRBm6-D13/3N/03	170963	1/30	
16/0.3		FRBm6-D16/3N/03	170964	1/30	

## Combined RCD/MCB Devices FRBm6 type A

6 kA, 3+N-pole

Conditionally surge current-proof 250 A, sensitive to residual pulsating DC, type A




	$I_n/I_{\Delta n}$ (A)	Type Designation	Article No.	Units per package	
<b>Characteristic B</b>					
	13/0.03	FRBm6-B13/3N/003-A	170987	1/30	
	16/0.03	FRBm6-B16/3N/003-A	170988	1/30	
	13/0.1	FRBm6-B13/3N/01-A	170898	1/30	
	16/0.1	FRBm6-B16/3N/01-A	170899	1/30	
	13/0.3	FRBm6-B13/3N/03-A	170945	1/30	
	16/0.3	FRBm6-B16/3N/03-A	170946	1/30	
<b>Characteristic C</b>					
	6/0.03	FRBm6-C6/3N/003-A	170996	1/30	
	10/0.03	FRBm6-C10/3N/003-A	170997	1/30	
	13/0.03	FRBm6-C13/3N/003-A	170998	1/30	
	16/0.03	FRBm6-C16/3N/003-A	170999	1/30	
	6/0.1	FRBm6-C6/3N/01-A	170926	1/30	
	10/0.1	FRBm6-C10/3N/01-A	170927	1/30	
	13/0.1	FRBm6-C13/3N/01-A	170928	1/30	
	16/0.1	FRBm6-C16/3N/01-A	170929	1/30	
	6/0.3	FRBm6-C6/3N/03-A	170954	1/30	
	10/0.3	FRBm6-C10/3N/03-A	170955	1/30	
	13/0.3	FRBm6-C13/3N/03-A	170956	1/30	
	16/0.3	FRBm6-C16/3N/03-A	170957	1/30	
	<b>Characteristic D</b>				
		6/0.03	FRBm6-D6/3N/003-A	171008	1/30
10/0.03		FRBm6-D10/3N/003-A	170892	1/30	
13/0.03		FRBm6-D13/3N/003-A	170893	1/30	
16/0.03		FRBm6-D16/3N/003-A	170894	1/30	
6/0.1		FRBm6-D6/3N/01-A	170938	1/30	
10/0.1		FRBm6-D10/3N/01-A	170939	1/30	
13/0.1		FRBm6-D13/3N/01-A	170940	1/30	
16/0.1		FRBm6-D16/3N/01-A	170941	1/30	
6/0.3		FRBm6-D6/3N/03-A	170966	1/30	
10/0.3		FRBm6-D10/3N/03-A	170967	1/30	
13/0.3		FRBm6-D13/3N/03-A	170968	1/30	
16/0.3		FRBm6-D16/3N/03-A	170969	1/30	


## Combined RCD/MCB Devices FRBm4 type AC

4.5 kA, 3+N-pole

Conditionally surge current-proof 250 A, type AC



	$I_n/I_{\Delta n}$ (A)	Type Designation	Article No.	Units per package
<b>Characteristic C</b>				
	20/0.03	FRBm4-C20/3N/003	170993	1/30
	25/0.03	FRBm4-C25/3N/003	170994	1/30
	32/0.03	FRBm4-C32/3N/003	170995	1/30
	20/0.1	FRBm4-C20/3N/01	170923	1/30
	25/0.1	FRBm4-C25/3N/01	170924	1/30
	32/0.1	FRBm4-C32/3N/01	170925	1/30
	20/0.3	FRBm4-C20/3N/03	170951	1/30
	25/0.3	FRBm4-C25/3N/03	170952	1/30
	32/0.3	FRBm4-C32/3N/03	170953	1/30


	<b>Characteristic D</b>			
	20/0.03	FRBm4-D20/3N/003	171007	1/30
	20/0.1	FRBm4-D20/3N/01	170937	1/30
	20/0.3	FRBm4-D20/3N/03	170965	1/30


## Combined RCD/MCB Devices FRBm4 type A

4.5 kA, 3+N-pole

Conditionally surge current-proof 250 A, sensitive to residual pulsating DC, type A



	$I_n/I_{\Delta n}$ (A)	Type Designation	Article No.	Units per package
<b>Characteristic C</b>				
	20/0.03	FRBm4-C20/3N/003-A	171000	1/30
	25/0.03	FRBm4-C25/3N/003-A	171001	1/30
	32/0.03	FRBm4-C32/3N/003-A	171002	1/30
	20/0.1	FRBm4-C20/3N/01-A	170930	1/30
	25/0.1	FRBm4-C25/3N/01-A	170931	1/30
	32/0.1	FRBm4-C32/3N/01-A	170932	1/30
	20/0.3	FRBm4-C20/3N/03-A	170958	1/30
	25/0.3	FRBm4-C25/3N/03-A	170959	1/30
	32/0.3	FRBm4-C32/3N/03-A	170960	1/30

<b>Characteristic D</b>				
	20/0.03	FRBm4-D20/3N/003-A	170895	1/30
	20/0.1	FRBm4-D20/3N/01-A	170942	1/30
	20/0.3	FRBm4-D20/3N/03-A	170970	1/30

## Specifications | Combined RCD/MCB Devices FRBm6, FRBm4, 3+N-pole

### Description

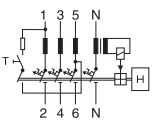
- Combined RCD/MCB device
- Line voltage-independent tripping
- Compatible with standard busbar
- Twin-purpose terminal (lift/open-mouthed) above and below
- Busbar positioning optionally above or below
- Free terminal space despite installed busbar
- Guide for secure terminal connection
- Switching toggle (MCB component) in colour designating the rated current
- Contact position indicator red - green
- Fault current tripping indicator white - blue
- Comprehensive range of accessories suitable for subsequent installation
- The test key "T" must be pressed every half year. The system operator must be informed of this obligation and his responsibility in a way that can be proven. The yearly test interval is only valid for residential and similar applications. Under all other conditions (e.g. damply or dusty environment), it's recommended to test in shorter intervals (e.g. monthly).
- Pressing the test key "T" serves the only purpose of function testing the residual current device (RCD). This test does not make earthing resistance measurement ( $R_E$ ), or proper checking of the earth conductor condition redundant, which must be performed separately.
- **Type -A:** Protects against special forms of residual pulsating DC which have not been smoothed.

### Accessories:

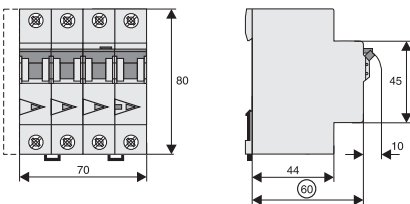
Auxiliary switch for subsequent installation	ZP-IHK	286052
	ZP-WHK	286053
Tripping signal contact for subsequent installation	ZP-NHK	248437
Shunt trip release	ZP-ASA/..	248438, 248439
Switching interlock	IS/SPE-1TE	101911
Screws lock 4MU		221954800

### Connection diagram

3+N-pole



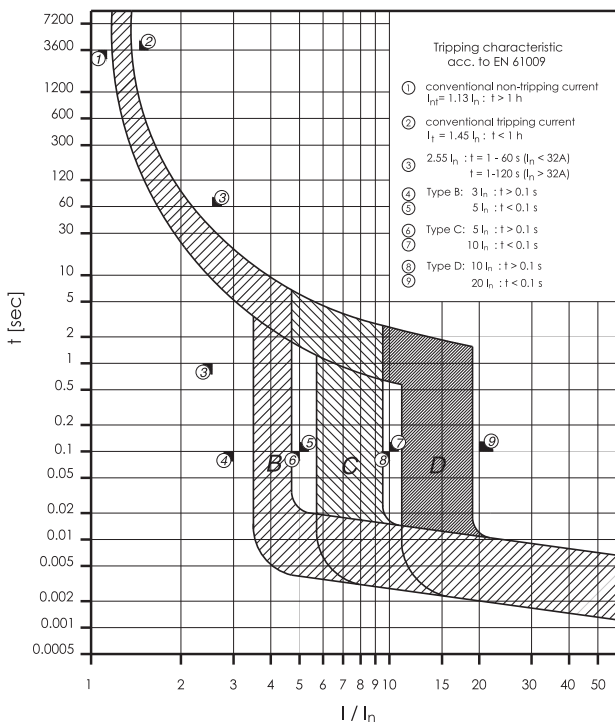
### Dimensions (mm)



## Technical Data

		<b>FRBm6, FRBm4, 3+N-pole</b>
<b>Electrical</b>		
Design according to		IEC/EN 61009
Current test marks as printed onto the device		
Tripping		line voltage-independent, instantaneous 250A (8/20 $\mu$ s), surge current-proof, N protected
Rated voltage	$U_n$	240/415V AC, 50Hz
Rated tripping current	$I_{\Delta n}$	30, 100, 300 mA
Rated non-tripping current	$I_{\Delta no}$	0.5 $I_{\Delta n}$
Sensitivity		AC and pulsating DC
Selectivity class		3
Rated breaking capacity	$I_{cn}$	
FRBm6		6 kA
FRBm4		4.5 kA
Rated current		6 - 32 A
Rated impulse withstand voltage	$U_{imp}$	4 kV (1.2/50 $\mu$ s)
Characteristic		B, C, D
Maximum back-up fuse (short circuit)		100 A gL (>10 kA)
<b>Endurance</b>		
electrical components		$\geq 4,000$ operating cycles
mechanical components		$\geq 10,000$ operating cycles
<b>Mechanical</b>		
Frame size		45 mm
Device height		80 mm
Device width		70 mm (4MU)
Mounting		3-position DIN rail clip, permits removal from existing busbar system
Degree of protection switch		IP20
Degree of protection, built-in		IP40
Upper and lower terminals		open mouthed/lift terminals
Terminal protection		finger and hand touch safe, VBG4, ÖVE-EN 6
Terminal capacity rigid solid/stranded wire		1 - 25 mm <sup>2</sup>
Terminal torque		2 - 2.4 Nm
Busbar thickness		0.8 - 2 mm
Tripping temperature		-25°C to +40°C
Storage- and transport temperature		-35°C to +60°C
Climatic conditions		acc. to IEC 68-2 (25..55°C / 90..95% RH)

Tripping Characteristic FRBm, Characteristics B, C and D



## Back-up Protection between FRBm and NZM1

Short circuit currents in kA.

	U <sub>e</sub> = 415 V		
	B	C	D
<b>6</b>	-	20	20
<b>10</b>	-	20	20
<b>13</b>	20	20	20
<b>16</b>	20	20	20
<b>20</b>	-	20	20
<b>25</b>	-	20	-

U<sub>e</sub> = 415V: I<sub>cn</sub> (FRBm4) = 4.5 kA (acc. to IEC/EN 61009)

U<sub>e</sub> = 415V: I<sub>cu</sub> (FRBm6) = 6 kA (acc. to IEC/EN 61009)

U<sub>e</sub> = 400/415V: I<sub>cn</sub> (NZMB1) = 25 kA (acc. to IEC/EN 60947-2)

U<sub>e</sub> = 400/415V: I<sub>cn</sub> (NZMC1) = 36 kA (acc. to IEC/EN 60947-2)

U<sub>e</sub> = 400/415V: I<sub>cn</sub> (NZMN1) = 50 kA (acc. to IEC/EN 60947-2)

U<sub>e</sub> = 400/415V: I<sub>cn</sub> (NZMH1) = 100 kA (acc. to IEC/EN 60947-2)

## Back-up Protection between FRBm and NZM2

Short circuit currents in kA.

	U <sub>e</sub> = 415 V		
	B	C	D
<b>6</b>	-	20	20
<b>10</b>	-	20	20
<b>13</b>	20	20	20
<b>16</b>	20	20	20
<b>20</b>	-	20	20
<b>25</b>	-	20	-

U<sub>e</sub> = 415V: I<sub>cn</sub> (FRBm4) = 4.5 kA (acc. to IEC/EN 61009)

U<sub>e</sub> = 415V: I<sub>cu</sub> (FRBm6) = 6 kA (acc. to IEC/EN 61009)

U<sub>e</sub> = 400/415V: I<sub>cn</sub> (NZMB2) = 25 kA (acc. to IEC/EN 60947-2)

U<sub>e</sub> = 400/415V: I<sub>cn</sub> (NZMC2) = 36 kA (acc. to IEC/EN 60947-2)

U<sub>e</sub> = 400/415V: I<sub>cn</sub> (NZMN2) = 50 kA (acc. to IEC/EN 60947-2)

U<sub>e</sub> = 400/415V: I<sub>cn</sub> (NZMH2) = 150 kA (acc. to IEC/EN 60947-2)